

THE ATHENÆUM

Journal of English and Foreign Literature, Science, and the Fine Arts.

No. 1456.

LONDON, SATURDAY, SEPTEMBER 22, 1855.

PRICE
FOURPENNY
Stamped Edition, 5d.

PRACTICAL AND ANALYTICAL CHEMISTRY.—BIRKBECK LABORATORY.—UNIVERSITY COLLEGE, LONDON.—Professor A. W. WILLIAMSON, F.R.S.

Practical Instruction in Organic and General Chemistry and the Principles of Chemical Research, as applied more particularly to Agriculture, Medicine and the Manufacturing Arts. The Laboratory is open daily, from the 2nd of October to the end of July, from 9 A.M. to 4 P.M., except on Saturdays, when it is closed at 2 o'clock.

Students occupy themselves with subjects of their own choice, under sanction of the Professor, by whom they are assisted with useful instruction and advice. A GOLD MEDAL PRIZE of 500, offered by the Baron de Goldsmid, for the most successful experimental research undertaken in the Birkbeck Laboratory during the Session 1855-56, may be competed for by all Students who attend the Annual Course of Instruction in the Laboratory. It will be awarded in August 1856, at the end of the Session. If none of the researches are of sufficient merit, the Prize will be competed for in the next Session.

The Gold and Silver Medals, as rewards of merit for this Class, will be given by the Council as usual.

Fees.—Session, 50s. 2s.; six months, 15s. 18s.; three months, 10s. 10s.; one month, 4s. 4s.

COURSE OF GENERAL CHEMISTRY.—Prof. Williamson's Lectures are held, except Saturdays, from 2nd of October to 15th of April, at 11 A.M. Fee, for perpetual admission, 5s.; whole term, 6s.; half term, 3s.

A Prospectus, with full details, may be had at the Office of the College.

ALEXANDER W. WILLIAMSON, F.R.S., Dean of the Faculty of Arts.

G. V. LING, Esq., Dean of the Faculty of Medicine.

CHAS. C. ATKINSON, Secretary to the Council.

September 11, 1855.

KING'S COLLEGE, LONDON.—Medical Department.

The WINTER SESSION, 1855-56, will COMMENCE on Monday, October 1, 1855, on which day all Students are expected to attend the Introductory Lecture, by Dr. Beale, at 4 o'clock.

The following Courses of Lectures will be given:—Anatomy.—Prof. Richard Partridge, F.R.S. Physiology and General and Morbid Anatomy.—Prof. Lionel S. Beale, M.B.

Chemistry.—Prof. W. A. Miller, M.D., F.R.S. Principles and Practice of Medicine.—Prof. George Budd, M.D. Principles and Practice of Surgery.—Prof. William Ferguson, F.R.S.

King's College Hospital.

The Hospital is visited daily. Clinical Lectures are given every week, both by the Physicians and by the Surgeons. The Physicians, Assistants and Clinical Clerks, the House Surgeons and Dressers, are selected by examination from the Students of the Hospital.

Scholarships.—New Students will have the privilege exclusively of contending, in October next, for two Warneford Scholarships of 500, per annum for three years. The examination commences on the 26th of September next in Divinity, Classics, (subjects the same as for Matriculation Examination this year at the University of London), Mathematics, and the Modern Languages.

One Scholarship of 400, tenable for three years, one of 300, and three of 200, each, tenable for two years, will be filled up in April next, the subjects of the examination being exclusively medical.

A Prospectus, containing full particulars upon every subject, may be obtained from Dr. Guy, Dean of the Department, or upon application to J. W. Cunningham Esq., Secretary.

R. W. JELF, D.D., Principal.

KING'S COLLEGE, LONDON.—New Students.

Students will be admitted into the following Departments on Tuesday, October 2, 1855.

The Theological Departments, which provides a Course of Instruction for those who propose to offer themselves as candidates for Holy Orders.

The Department of General Literature and Science, including Greek and Latin, Mathematics, English Literature, History, and Composition, French and German, and adapted for those Students who pursue to obtain the Hon. East India Company's Service, or to proceed to the Universities.

The Department of Applied Sciences, which provides a Course of Instruction for those who are likely to be engaged in Civil Engineering, Surveying, Architecture, and the higher branches of Manufacturing Arts.

The Military Department, intended for the Training of those who expect Commissions in the Army, or direct Appointments in the Hon. East India Company's Service.

The Civil Service and Mercantile Department designed:—1. For those expecting or intending to offer themselves as candidates for Appointments in the Civil Service of Her Majesty's Government. 2. For those who are preparing themselves for Mercantile or other similar pursuits.

A Prospectus, containing full particulars, may be obtained from J. W. Cunningham Esq., King's College, London.

R. W. JELF, D.D., Principal.

KING'S COLLEGE, LONDON.—The School RE-OPENED on Tuesday, September 18.—New Pupils are now admitted.

The School is divided into two parts:—1. The Division of Classics, Mathematics, and General Literature, the studies in which are directed to prepare Pupils for the Universities, for the Theological, General Literature, and Medical Departments of King's College, and for the Learned Professions.

2. The Division of Modern Instruction, including Pupils intended for General and Mercantile Pursuits, for the Service of Architecture, Engineering, and Military Service in King's College, for the Military Academies, for the Civil Service, for the Royal Navy, and for the Commercial Marine.

A Prospectus, containing full information, may be obtained at the Office of the College.

R. W. JELF, D.D., Principal.

LONDON HOSPITAL MEDICAL AND SURGICAL COLLEGE, MILE END.

The WINTER SESSION will COMMENCE on MONDAY, October 1, 1855, when the INTRODUCTORY LECTURE will be delivered by Mr. A. N. PERPETUAL FEE, of University College, London, Esq., of Surgeons, and Apothecaries' Hall, 14, Guiltine, payable by two instalments of 20 Guineas each, at the commencement of the first two Sessions of attendance.

Lectures alone, 50s. special entries to Lectures or Hospital

THE MIDDLESEX HOSPITAL.—The

WINTER SESSION will commence on MONDAY, October 1st, with an INTRODUCTORY ADDRESS by A. P. STEWART, M.D., at Eight o'clock, P.M.

The Hospital contains upwards of 300 beds, of which 120 are for Medical and 180 for Surgical Cases. The Cancer Establishment receives 30 patients. Wards are set apart also for the reception of cases of Uterine Disease and Syphilis. Upwards of 15,000 Out-patients and nearly 300 Midwifery cases were attended during the past year. Ophthalmic and Dental cases are separately attended to.

Fee for Eighteen Months' Medical and Three Years' Surgical Practice, 30l.

Fee for Attendance on all the Lectures and Hospital Practice required by the College of Surgeons and the Society of Apothecaries, 75s. which may be paid by instalments of 20l. at the beginning of the First Session, 30l. at the beginning of the Second Session, and 15l. at the beginning of the Third Session.

For further information apply to Mr. De Morgan, Treasurer to the School, at the Hospital, daily from One to half-past Two o'clock; to Dr. Corfe, the Resident Medical Officer; or to Mr. Shedden, Secretary to the Hospital.

UNIVERSITY AND KING'S COLLEGE, ABERDEEN.

MEDICAL SCHOOL.

The WINTER SESSION commences on the First MONDAY of November, when the Third FRIDAY of April will be an INTRODUCTORY LECTURE on the First Monday of November, at Two o'clock, P.M.

Subjects. Lectures. Hours. Fees. Midwifery. Dr. Rainey. 8 to 9 A.M. 2s. 3d. Anatomical Demonstrations. Dr. Redfern. 10 to 11 A.M. 3s. 6d. Chemistry. Dr. Fyfe. 10 to 11 A.M. 3s. 6d. Materia Medica. Dr. Rattray. 9 to 10 A.M. 3s. 6d. Practice of Medicine. Dr. Redfern. 2 to 3 P.M. 3s. 6d. Anatomy and Physiology. Dr. Redfern. 3 to 4 P.M. 3s. 6d. Surgery. Dr. Kerr. 3 to 4 P.M. 3s. 6d. Institutes of Medicine (Physiology). Dr. Christie. 4 to 5 P.M. 3s. 6d.

SUMMER SESSION.

Botany. Rev. J. C. Brown. 8 to 9 A.M. 2s. 3d. Practical Chemistry. Dr. Fyfe. 10 to 11 A.M. 3s. 6d. Anatomical Demonstrations. Dr. Redfern. 2 to 3 P.M. 3s. 6d. Medical Jurisprudence. Dr. Reid. 3 to 4 P.M. 3s. 6d. Histology. Dr. Redfern. Natural Philosophy. David Thomson, M.A. 2s. 3d. Natural History. Rev. J. Longmuir.

The Rooms for Practical Anatomy are personally superintended by Dr. Redfern.

Students are required to matriculate within the first month of the Winter Session, and within the first fortnight of the Summer Session, and no certificate of attendance will be given without such matriculation. The Matriculation Fee for all the Classes is one sum of 2s. for the Winter and one of 2s. 6d. for the Summer Session.

Chemistry will be taught, as formerly, in King's College; and the other Classes in the Medical School, in Paul's street.

ROYAL INFIRMARY.

The Hospital is open daily at 10 o'clock, A.M., and contains upwards of three hundred beds. Separate Courses on Clinical Medicine and Clinical Surgery are delivered in the Hospital twice a week.

Physicians.—Dr. Dyce, Dr. Kilgour, Dr. W. Williamson, Dr. Nicol.

Surgeons.—Wm. Keith, Esq., William Pirrie, Esq., David Kerr, Esq., A. J. Lizars, Esq., John Cadendine, Esq., Ophthalmic Surgeon.

Lecturers on Clinical Medicine and Surgery.—Dr. Kilgour, Wm. Keith, Esq.

Fee for the Medical and Surgical Practice of the Hospital—first year, 30s.; second year, making perpetual, 30s. 2s.; or one sum of 60s.

Clinical Medicine.—For the First Course, 2s. 2s. Subsequent Courses, 1s. 1s. each.

Clinical Surgery.—For the First Course, 2s. 2s. Subsequent Courses, 1s. 1s. each.

DISPENSARY.

The Aberdeen General Dispensary, Vaccine, and Lying-in Institution, is open daily from 10 o'clock to 4 o'clock, for the Medical Officers. There are annually about 5,000 patients, either prescribed for at the Institution or visited at their own houses.

LUNATIC ASYLUM.

The Asylum contains about 200 patients. A limited number of Students are admitted to see the practice. Fee, for a Course of Three Months, 20s.

Consulting Physician.—Dr. Macrobine.

Resident Physician and Superintendent.—Dr. Robert Jamieson.

The Library of the University contains about 55,000 volumes, and is free to all the Students of King's College.

The Medico-Chirurgical Society possesses a valuable Medical Library of nearly 4,000 volumes, and a Reading-Room, to both of which, and to all the privileges of Junior Members, Students are admitted on payment of 10s. 10s. per year, becoming free members after three payments. FREDERICK FULLER, Secretary.

King's College, Aberdeen, September, 1855.

LADIES' COLLEGE, 47, BEDFORD-SQUARE.—The

MICHAELMAS TERM will COMMENCE on THURSDAY, the 11th of OCTOBER, under the following Professors:—Biblical Literature.—Rev. J. Baines, M.A., St. John's College, Oxford.

Moral Philosophy.—Martin H. Irving, Esq., B.A., late Scholar of Balliol College, Oxford.

Modern History.—John Sanford, Esq., of Lincoln's Inn.

Mathematics.—Rev. H. T. Hume, M.A., Mathematical Master in St. Peter's College, Westminster.

Latin.—Rev. J. Baines, M.A.

METROPOLITAN SCHOOL OF SCIENCE

APPLIED TO MINING AND THE ARTS.

MUSEUM OF PRACTICAL GEOLOGY.

Director.—SIR RODERICK IMPEY MURCHISON, F.R.S. &c.

During the Session 1855-56, which will COMMENCE on the 1st of OCTOBER, the following Courses of Lectures and Practical Demonstrations will be given:—1. CHEMISTRY. By A. W. Hofmann, Ph.D. F.R.S.

2. METALLURGY. By John Perry, M.D. F.R.S.

3. NATURAL HISTORY. By T. H. Huxley, F.R.S.

4. MINERALOGY. By W. W. Smyth, M.A.

5. GEOLOGY. By A. C. Ramsay, F.R.S.

6. APPLIED MECHANICS. By Robert Willis, M.A. F.R.S.

7. PHYSICS. By G. G. Stokes, M.A. F.R.S.

Instruction in MECHANICAL DRAWING, by Mr. Binns.

The Fee for Matriculated Students (exclusive of the Laboratory) is 30s. for two years in one payment, or two annual payments of 20s.

Pupils are received in the Royal College of Chemistry, the Laboratory of the School under the direction of Dr. Hofmann, at a fee of 10s. for the term of three months. The same fee is charged in the Metallurgical Laboratory, under the direction of Dr. Perry.

Tickets to separate Courses of Lectures are issued at 2s. 3d. and 4s. each. Officers in the Queen's or the East India Company's Service, acting Mining Agents, and Managers, may obtain them at half the usual charge.

Certificated Schoolmasters, Pupil-Teachers, and others engaged in Education, are respectfully invited to attend the lectures and fees. H.R.H. the Prince of Wales has granted two Exhibitions, and others have also been established.

For prospectus and information apply at the Museum of Practical Geology, Jernyn-street, London.

TRENHAM REEKS, Registrar.

THE GOVERNESSES' INSTITUTION, 34,

Soho-square.—Mrs. WAGHORN, who has resided many years in Education, respectfully invites the attention of the Nobility, Gentry, and Principals of Schools to her Register of English and Foreign GOVERNESSES, TEACHERS, COMPANIONS, TUTORS, and PROFESSORS. School Property transferred, and Pupils introduced in England, France, and Germany. No charge to Principals.

MILL-HILL SCHOOL, HENDON, MIDDLESEX.

Head Master.—The Rev. PHILIP SMITH, B.A., assisted by Five Resident Masters, besides other Teachers.

The object of this Public School is to give a first-class Education, based on religious principles. The Course of Study includes Classics, Mathematics, and the various branches of a sound English education. The situation is beautiful, and the spacious premises were provided expressly for the school; and the domestic arrangements are on a most liberal scale.

The SCHOOL RE-OPENED on THURSDAY, September 20. Prospectuses on application to the Head Master, at the School; or the Secretary, at the Committee Room, Founders' Hall, Swittham-lane, London.

By order of the Committee.

ALGERNON WELLS, Secretary.

THE MIDDLE SCHOOL, PECKHAM, within

an hour's walk of the New Crystal Palace, Sydenham, is adapted for first-class MERCANTILE INSTRUCTION. References given to leading firms. Present number of Pupils, one hundred. Terms for a few Pupil Boarders, 40s. to 50s. guineas, and extras of any kind. Omnibuses to and from Gracechurch-street every ten minutes.

J. YEATS, F.R.G.S., Principal.

ST. JOHN'S WOOD PROPRIETARY COL-

LEGIATE SCHOOL RE-OPENS TUESDAY, Sept. 18.

An Exhibition of 300, a year for three years, to Students intended for the College or Medical School, will be given at Midsummer, 1856, and will be open to pupils entered at reduced fees.

The Second Master receives Boarders at 14s. per Term. Prospectuses and information at the School, 25, St. John's Wood Park, of the Head Master, the Rev. Thomas Markby, &c.

RICHARD HODSON, Hon. Sec.

EDUCATION.—MISS BAIN, 39, Camden-

square, RECEIVES GENTLEMEN'S DAUGHTERS TO EDUCATE, at 50 guineas per annum, including Mathematics, French by a resident Parisian, Piano, Vocal Harmony, Calisthenics, &c. Superior Masters attend. Highest references given.

BRIGHTON.—EDUCATION.—There are

VACANCIES in a First-Class School, where only Twelve Young Ladies are received. Eminent Professors attend. A foreign Protestant Governess resides in the house. The domestic arrangements are liberal, and replete with every comfort. References to parents of Pupils.—Address the Misses B., care of Mr. McCarroll, North-street, Brighton.

SCHOOL FOR LITTLE BOYS, and HOME

for CHILDREN FROM INDIA, No. 11, Norland-square, Notting-hill, London.—The two Daughters of a deceased Clergyman receive into their family a LIMITED NUMBER OF LITTLE BOYS, and whilst affording them all the comforts of a home, prepare them for public or private Schools. Terms and Prospectus upon application, or sent in reply to a written inquiry. Parents and Guardians are invited to inspect the premises. References to several eminent Clergymen.

DUNDEE PUBLIC SEMINARIES.—

WANTED, A TEACHER for the DRAWING DEPARTMENT and SCHOOL OF DESIGN in the DUNDEE PUBLIC SEMINARIES. In addition to the usual branches of Drawing and Colouring, he will be required to give instructions in the school of Ornamental Drawing.

The Directors having provided commodious apartments for these branches of Education, and obtained the sanction and recommendation of Government for Schools of Design, the school is a most favorable opening for a qualified Teacher; and the situation of Certificated Masters of the Government School of Design is invited to it.

Applications and Testimonials may be lodged with Mr. James MILNE, 11, Reform-street, Dundee, Secretary to the Directors, on or before the Twelfth day of October next.

Dundee, September 13, 1855.

GROSVENOR-PLACE SCHOOL of ANATOMY and MEDICINE, adjoining St. George's Hospital. The WINTER SESSION will COMMENCE October 1, 1855. Fees for the entire Course of Lectures, 45 Guineas. Fees for Lectures and Hospital Practice, 70 Guineas.
Further particulars to be had of Dr. Lankster, 8, Saville-row; Mr. R. W. Burford, at the School, 1, Grosvenor-place.

EDINBURGH LADIES' INSTITUTION,
1, PARK-PLACE.
Head Master—Mr. DALGLEISH.
Lady Superintendent—Miss KENNEDY.
The TWENTY-THIRD SESSION commences on the 1st of October, 1855.

BRANCHES TAUGHT, AND TEACHERS.

1. English Grammar, Literature, and Composition, History, Physical and Political Geography, and Outlines of Science—Mr. Steen, 8, Wharton-place, Mr. Millar, 6, Mary-place, Mr. W. S. Dalgleish, 1, Park-place.
2. Elocution—Mr. F. B. Calvert, 25, York-place.
3. Natural History and Physical Science—Mr. Anderson, 7, Gayfield-square.
4. Latin—Mr. Steen and Mr. W. S. Dalgleish.
5. French Language and Literature—Mons. F. Chaumont, 44, Castle-street.
6. Italian Language and Literature—Signor Jannetti, 14, Hope-street.
7. German Language and Literature—Dr. Nachot, 119, Prince's-street.
8. Writing, Arithmetic, and Mathematics—Mr. Dalgleish, 1, Park-place, Mr. Pryde, 30, St. Bridge.
9. Drawing, with Theory and Practice of Perspective—Mr. D. F. Sureau, 3, Great King-street.
10. English and Italian Singing—Miss Forrester, 56, Queen-street, Signor Orsini, 108, Prince's-street.
11. Pianoforte, Theory of Music, and Elements of Composition—Mr. J. C. Kieser, 14, Hope-street, Mr. J. T. Sureau, 3, Hope-street, Mr. Dibdin, 4, St. Frederick-street, Mr. Kreuter, 48, India-street.
12. Harp—Mr. Dibdin.
13. Dancing, Exercises, and Deportment—Miss Angell, 1, Albany-place, Mr. Lewis, 1, Frederick-street.
14. Religious Knowledge—Mr. Dalgleish, Mr. Steen, Mr. Millar, and Mr. W. S. Dalgleish.

Principal Secretaries—Miss Pennicook.

Teacher of Needlework—Miss Ronaldson.

Principal Assistant Secretaries—Misses Elliot, Gilbanks, Sawtell, Wilson, and Kay.

FEES.—

- For the Institution Course of Instruction,
1st Division 18 Guineas per Annum.
2nd Division 12 Guineas —
3rd Division 8 Guineas —
Preparatory Division, Junior, 12 Guineas per Annum.
Do. Senior, 15 Guineas —
Extra Charge for Musical Instruments, 10s. 6d. per Quarter.
All Fees payable Quarterly in advance.
Quarter Days—1st October, 10th December, 1st March, and 10th May.
HOLIDAYS.—The Sacramental Holidays in October and April, a week at Christmas, Good Friday, and the Queen's Birthday. The Vacation—the month of August and September.
All the Pupils are requested to Matriculate before entering any Class.
Due notice is expected to be given to the Head Master before any Pupil is removed from the Institution.
BOARD.—Mr. and Mrs. Dalgleish, assisted by Resident Governesses, receive a limited number of Young Ladies as Boarders.
Prospectuses, containing full information, may be had by applying at the Institution.
Edinburgh. W. S. DALGLEISH, Secretary.
September, 1855.

CALNE SCHOOL, WILTS.

The REV. W. B. JACOB, M.A.,
Of Emmanuel College, Cambridge;
Assistant Master, Mr. T. CLAYTON, B.A., of Trinity College, Oxford, Hertford Scholar;
Receives Pupils between the ages of Eight and Fifteen, undertaking to give them either a strictly Classical or a more general Education, and to prepare them for the Public Schools, for the Military Colleges, for the India Appointments, or for any of the Professions.

The regular Course of Instruction includes

1. CLASSICS—to which attention is given in a greater or less degree, according to the desire of the Parents, and the Profession for which the Pupil is to be prepared.
2. MATHEMATICS—including Geometry, Arithmetic, Algebra, Fortification, Cosmography, and Land Surveying.
3. ENGLISH—Grammar, Composition, History, Geography, Writing, &c.
4. FRENCH—M. Leduc.
5. NATURAL SCIENCE—Mr. Cogan, of Bath, delivers a Course of Lectures every half-year.

TERMS—FORTY-SIX GUINEAS PER ANNUM.

At the desire of the Parents, German (by Herr Leves), Drawing (by Mr. Keene), and Music are taught on the usual terms.
A report of each Boy's conduct and progress is sent to his Parents every month.

Reference may be made to the following Gentlemen—

- The Ven. Archbishop Macdonald, Bishop's Canning, Wilts.
Rev. John Guthrie, The Vicarage, Calne.
Rev. W. Dalby, Compton Bassett Rectory, near Calne.
Rev. H. Drury, Bremhill Lodge, Chippenham.
Rev. G. W. Daubeny, Seend, near Devizes.
Rev. W. Wray, (Fellow of King's Coll. Cambridge), Eton College.
H. G. Awdry, Esq., Norton Lodge, Chippenham.
J. Thobald, Esq., Hyde Abbey, Winchester.
Rev. Abbot, Esq., Woodlands Lodge, Blackheath, Kent.
H. C. Gale, Esq., Winchester.
Rev. Lomer, Esq., Littlelands, Bitterne, near Southampton.

Quarter Days—April 6 and October 11.

A Quarter's Notice must be given when a Pupil is removed from the School.

PROTESTANT EDUCATION at DIEPPE.

Established Eleven Years, by the Mlle. CIEUTAT, born and educated at Paris—Only Protestant Young Ladies are admitted. Numbers, Twenty. Healthy situation facing the Sea, with large Garden. Complete education, entirely in French. All the necessary classes for passing the examinations at Paris. Terms, 400 fr. per annum, everything included, excepting the Arts d'agrément. Mlle. Augagneur, Professor of Singing, Piano and Harmony, resides in the Establishment; terms, 50 fr. and with Singing, 100 fr. The year commences October 1st, and finishes August 15th. Recommended by M. le Pasteur Bécville, at Dieppe; M. le Pasteur Coquerel, at Paris; Mr. Chapman, French Master at Christ's Hospital; the Clergy Orphan School; and the Rev. A. Winter, King's College School, London, by all the Parents of Pupils, whose addresses can be had on application. Arrangements can be made to receive charge of Young Ladies in London, as well as to deliver them to their Friends there, at the Vacation, if convenient to the Parents.—Address, pre-paid, to Mlle. CIEUTAT, sur la Plage, Dieppe.

THE PUBLIC SCHOOLS.—The Rev. PHILIP A. LONGMORE, M.A., Canon, Incumbent of Hermitage, Berke, RECEIVES PUPILS to prepare for Eton, Rugby, Harrow, &c.—Terms, 80s. a year; a reduction in the case of brothers. Reference may be made to Rev. H. Edwards, Nursted, Gravesend; Rev. E. Parnham, Aylesbury; E. Kewenau, Esq., St. Harrier-street; and many others, friends of former pupils. Vacancies at Michaelmas.—Hermitage, Newbury.

ESTABLISHMENT for YOUNG LADIES,
36, GEORGE-STREET, Euston-square.—Established 1842. A DRAWING CLASS will meet at this Establishment twice a week, commencing the first week in OCTOBER, to which Young Ladies will be received, exclusive of any other branch of Tuition, if desired.—Terms and further particulars may be known on application for Circulars.

DR. KINKEL'S CLASSES for LADIES,
in GERMAN and the HISTORY of ART; and Madame KINKEL'S Classes for SINGING and HARMONY, will RECOMMENCE in the first week of OCTOBER, at their Residence, 6, EASTBOURNE-TERRACE. Three German Classes, one of them being an Advanced Class for the History of German Literature, with Composition and Conversation. Two German Evening Classes for Gentlemen. The Class on the History of Ancient Art, in English, to commence in November.—Particulars in the Prospectus, to be applied for to Dr. KINKEL, 6, Eastbourne-terrace, Paddington.

GERMAN EDUCATION.—CANNSTAT on the NECKAR.—Mr. HIRSCH has still a few VACANCIES in his German School, London. Pupils may study TWO Languages, in the same or in alternate Lessons, without any addition to their terms, at their own or at his residence, 9, Old Bond-street, Piccadilly.

GERMAN, ITALIAN, FRENCH.—9, OLD BOND-STREET.—Dr. ALTSCHUL, Examiner Roy. Coll. France, and Member of the Académie de France, may study TWO LANGUAGES, in the same or in alternate Lessons, without any addition to their terms, at their own or at his residence, 9, Old Bond-street, Piccadilly.

UNE JEUNE DAME PARISIENNE, munie de recommandations les plus distinguées, très versée dans l'enseignement, et ayant quelques heures de loisir dans la journée, des leçons utiles en français ou de Français ou d'Italien dans des familles, pensionnaires ou chez elle.—Adresse, L. R. 8, Princes-street, Cadogan-street, Chelsea.

QUEEN'S COLLEGE, LONDON,

67, HARLEY-STREET.
Incorporated by Royal Charter, 1833.
For GENERAL PENAL EDUCATION, and for GRANTING CERTIFICATES OF KNOWLEDGE.

Visitors.

The Right Hon. and Right Rev. the Lord Bishop of LONDON.

Council.

- The Right Rev. the Lord Bishop of Lichfield.
The Right Rev. the Lord Bishop of Oxford.
The Right Rev. the Lord Bishop of Norwich.
The Right Rev. Thomas Carr, D.D. late Lord Bishop of Bombay.
The Right Hon. Lord Alington, Treasurer, M.P.
The Right Hon. W. Cowper, M.P.
Sir Walter R. Farquhar, Bart.
The Rev. H. Alford, B.D.
Sir Charles Lemon, Bart. M.P. F.R.S.
Sir John Forbes, M.D. D.C.L. F.R.S.
The Rev. J. R. M. Anderson, M.A.
The Rev. B. W. Brown, Esq. Ph.D. F.G.S.
Edmund Beckett Denison, M.A. Q.C.
The Rev. T. G. Hall, M.A.
The Rev. J. H. Keble, M.A.
The Chairman of Committee of Education.

Committee of Education.

Consisting of the Professors of the College.

- Chairman—Rev. R. C. Trevelyan, B.D.
Deputy Chairman—Rev. C. G. Nicolson, F.R.G.S.
Edward Armitage, Esq.
The Rev. T. A. Cook, M.A.
The Rev. Francis Garden, M.A.
John Hullah.
The Rev. E. H. Plumptre, M.A.
Henry Warren, Esq.
The Rev. J. S. Brewer, M.A.

Lady Visitors.

- The Duchesses of Argyll.
The Duchesses of Charlemon.
Mrs. Marcell.

Acting Lady Visitors.

- Lady Bell.
Mrs. Booth.
The Viscountess Canning.
Mrs. E. B. Denison.
The Hon. Mrs. G. Denman.
Mrs. Douglas Galtton.
The Hon. Mrs. Gordon.
Mrs. Wilkieson.
Lady Herschel.
The Lady Hobart.
Mrs. Arthur Hobhouse.
Mrs. W. M. James.
Lady Lyell.
Mrs. Arthur Malkin.
Miss Maurice.
Michaelmas Term will commence on the 4th of October, 1855, and close the 10th of December.
Lent Term will commence on the 14th of January, 1856, and close the 10th of March.
Easter Term will commence on the 3rd of April, 1856, and close the 30th of June.
The Fees are a composition of 80s. 5s. for the year, or 94s. 5s. for one Term; or 11s. 6d. per Term, for those Classes which meet twice in the week, and 1s. for those which meet once. All payments to be made at entrance.
Preparatory Class for Children above eight years of age, under the immediate direction of the Professors, to supply the want of good elementary instruction, and as introductory to the College Course.
Lady Superintendent—Miss Parry.
Assistant—Miss D. Beale.

The year of study will commence on the 1st of September, and extend to the last week in July, with vacations at Christmas and Easter.

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LONDON, SATURDAY, SEPTEMBER 22, 1855.

REVIEWS

Embassies and Foreign Courts: a History of Diplomacy. By "The Roving Englishman." Routledge & Co.

A living statesman has said, that diplomatic science would be unnecessary if you could go with a draft treaty in one hand and a pen in the other, and say to a Foreign minister, "Now sir, sign that treaty, or jump out of the window." The object of diplomacy, then, is the persuasion of governments;—it convinces, seduces, or intimidates. Recently, there has been a strong desire on the part of the English public to unveil the mystery of this recondite profession. "The Roving Englishman," who is himself experienced in its arts, is a satirical chronicler. His style is not less lively than severe; not subtle enough for irony, but caustic, free, and full of earnest meaning. As far as the historical department of his subject is concerned, he is, and claims to be, no more than a systematic compiler. The salt of the book is to be found in the keen allusions which cluster round every anecdote, the light struck from ancient and modern instances to illustrate the events of our own times, and the ridicule bestowed on Mediæval feelings and manners. The writer pleads for the legitimacy of genius; his portraits are not caricatures, but exposures; his plain speaking is a blight upon the ideal of fans, feathers, and plush. Beyond this, the volume is an admirable manual, skilfully adapted to the purpose of diffusing a general knowledge of the history and the working of diplomacy. It is, however, a fault in a production designed for popular circulation, that readers unacquainted with Latin, German, and French,—and their name is Legion,—will not be able to enjoy some of its most interesting passages.

The best service done by "The Roving Englishman" is that of showing how largely mere personal interests have worked in the policy of courts. Diplomats rarely, in sentiment, belong to any nation. Their fame originates among themselves, and spreads from that circle outwards. Therefore—to omit all notice of topics so common as the Justinian Code and the early jurists—we find that from the first the power of manners has been appreciated in an ambassador more highly, perhaps, than either intellect or experience. Manners, it is true, when they influence external minds, are a form of intellectual expression,—but their power does not spread, like that of oratory; it prevails over individuals only. It is true that theoretical diplomatists insist upon encyclopedic knowledge in an ambassador; but governments have not always been of that opinion. "Keep a good table and be civil to the women," was Napoleon's summary of instruction.—"Above all, no zeal," was the axiom of Talleyrand.—"Listen and look," said a third epigrammatist, "but tell and show nothing." It is agreed, however, that quickness, vigilance, and immaculate good-humour are essential.

In former times, when diplomatists were not graduated into ranks, they affected regal manners, and kings accredited their vanity. It was long considered important to define the station, the religion, and the age of an ambassador; but, singularly, women were sometimes admitted into the decorated circle. The Chevalier d'Eon was, until her (or his) death, supposed to be one in disguise; but it is certain that the widow of Marshal Guebriant was envoy from France to the Court of Vladislava the Fourth, of Poland, in 1646, which character, says Möser, she sustained with much dignity;—

with much insolence, according to Laboureur. Her mission, it is true, was of a delicate nature, and gave some licence to her pride. The Countess of Königsmark, again, was despatched by Augustus the Second, of Poland, to make terms with Charles the Twelfth, though that fierce monarch refused to negotiate with her. His reasons, however, were public, not personal:—at least they were not those of Philip the Second, who asked Jeannin, a plebeian ambassador of Henry the Fourth, "Are you a gentleman?"—"Yes," he answered, "if Adam was one."—"But whose son are you?"—"The son of my own virtues."

Dining, our Premier has said, is the life and soul of diplomacy. Therefore, ambassadors are encouraged to be hospitable at the public cost, but of any absurdities of ostentation they must defray the expense themselves. In 1775, Prince Repnin, Russian Ambassador at the Porte, caused thirty-three large houses to be furnished splendidly, for himself and his suite, at Constantinople. He acted upon policy, no doubt. Up to the outbreak of the present war, the Russian Embassy was one of the most superb establishments in the Ottoman capital. Formerly, a coach-and-six was supposed essential to the dignity of an ambassador; but the expenditure of these functionaries rose to such a height that a re-action took place, and they lived with less regard to dramatic luxury.

The Eastern system of presents was the next endowment of diplomacy. Some individuals appear to have valued them for the sentiment they expressed, as Lord Carteret, when Frederick the Fourth of Denmark, at the farewell audience, unbuckled his sword and said, "Since His Excellency the Ambassador has made peace between us and Sweden, we have no longer need of a sword, and His Excellency will oblige us by keeping it as a souvenir." Blucher, however, disgusted by gifts of ribbon and decorations, rejoiced when the foreign Courts "were obliged to come out with their snuff-boxes." In our own times, honorary presents are the rule; but ambassadors have occasionally worn the jewels which their husbands could not accept. "Ambassadors," in fact, constitute a particular topic with "The Roving Englishman":—

"The ambassadors no sooner got their title than they resolved to display it in as public a manner as possible. Quiet, sober, old diplomatists, all tricks and wig, were promptly married by blooming and strong-minded young females. Widows of large fortune and a taste for society lay in wait for tottering elderly gentlemen, who might have been their grandfathers, and bore them off, in spite of senile struggles, to the nearest clergyman. There was quite a mania for ambassadors among marriageable ladies. Numerous females who had long disappeared miraculously in company with a plate-chest and a captain in the Guards, turned up again in the most unexpected and distressing manner. They threatened their husbands with suits in Doctors' Commons and Consistory Courts, unless they were immediately gratified by the fullest restitution of conjugal rights. Other energetic ladies who had kept their virtue till it was sour, and had hitherto submitted to be stowed away in holes or corners, started off with great decision to the most distant foreign courts; and ambassadors who were whispering sweet nothings (in the interest of their country, of course,) to the most distinguished beauties of Paris and Madrid were horror-stricken at receiving a well-known box on the ear, and an order to take larger lodgings, from an awful person, with a false front and an antediluvian bonnet, whom they had not seen these twenty years. Diplomacy, from being rather a jolly profession than otherwise, became as gloomy as the private life of a comic actor, and most of the small-legged, knocked-kneed, dried-up little beaux, in peach-blossom coats, who were among the diplomatic celebrities of those times, thought of the Pope with a bitterness and impotence of anger, which

was the laughter of all the pages and equestrians in Europe."

The wives of envoys and ministers of a lower grade than ambassadors were not received at the old court of France with so much distinction as ambassadors. The king did not kiss them, nor did his sons or daughters, and they were not asked to be seated,—for it was the privilege of ambassadors to be kissed, and to sit on a stool in the presence of empresses and queens, or, at the Vatican, on three cushions placed on the floor.—

"There was a great dispute at Stockholm, in 1782. The wife of the Austrian envoy (a diplomatist of the second class) actually refused to kiss the queen's hand unless her majesty gave her a return kiss on the cheek in the same manner as to the wives of senators. Here was a pretty business. The queen refused to receive her at all; and resolved to be revenged on the bumptious little Austrian. Her majesty watched an opportunity with female patience and address. It came, as all opportunities of punishing insolence do come if we wait for them. The Austrian lady went to a ball at the town-hall. Austrian ladies dance very well, and I dare say she liked it. She little knew the sleepless vivacity of a royal pique. Immediately the royal family arrived, and they probably came on purpose, the master of the ceremonies approached her with his most official countenance. Let a country gentleman ask for a passport at our British Foreign Office, and he will get an idea of the offended majesty which glowed in the master of the ceremonies' eyes on this occasion: a quaint picture of the lofty and absurd.—'Sir,' said the little lady, stopping in her capers very unwillingly, 'you interrupt me.'—The official mouth moved with an official whisper.—The Austrian could not or would not hear, but she blushed scarlet, and her eyes filled with tears.—Again the official mouth moved. Its words were not very plain or polite, official words seldom are, but their purport for a wonder was intelligible. 'She had not been presented, and therefore could not remain within the august precincts of the royal circle!' I am bound to say that I would not have sat at meat that evening with the offended lady,—no, not to have been introduced to an accommodating bill-discounter the next morning. The queen had had her revenge, but the insult so rankled, that she who had received it never rested till her husband had solicited his recall, and stirred up the Imperial court to resent the affront. This woman's quarrel about a kiss interrupted all international business between Austria and Sweden during no less than six years, for another envoy was not sent to Stockholm till 1788."

"The Roving Englishman" has another story,—but we leave the responsibility of its relation to him.—

"A distinguished traveller used to tell an odd story as to a dispute touching the reception of a Spanish minister's wife. This lady was not received at court, not because she was merely of low birth, but because she had committed the indiscretion of having been found out in an intrigue with the notorious Prince of the Peace. Her husband was of course instructed by his spouse to refuse to submit tamely to the indignity offered to her. There were many ladies about the court, she urged with great truth, who were quite as bad as she was, or perhaps worse; and as to their not having been found out, she did not see what that mattered, for anybody might find them out who pleased. Therefore her husband wrote an official letter of remonstrance, in which he argued the point with unanswerable force and frankness. 'My wife,' said he, in this sensible document, 'as the wife of the minister of Spain, is a public woman, in the same manner as I am a public man, and therefore she ought to be received at court.'—'Pardon, M. le Ministre,' returned the obdurate organ of a cruel court, 'that is the very reason why she is not received.'"

The round table of diplomacy was applied (as perhaps King Arthur designed it) to appease the strife for precedence. Upon this, however, the first ambassador, as he sat down, claimed his own place at the head of the table. If so

much was conceded to him, the others insisted on taking that place by turns. Every diplomatist handed his colleagues a copy of the treaty signed by him alone, so that each one had his name at the top of the signatures:—

"Sometimes the raging vanity of these official peacemakers has been soothed by fixing their place at a conference according to the date of their arrival, and many post-horses were killed in this way before the invention of railways. Sometimes they have been all allowed to enter a room at the same time through different doors. Each diplomatist having a man Friday to peep through the keyhole, and see that he was prepared to make a rush (and win by a neck, if possible) immediately the bolt was withdrawn, and the signal to start given by the master of the ceremonies, or one of the sticks in waiting, who were, of course, obliged to be present as a gentle warning on such occasions."

It was at length settled that, at a round table, the seat next the door was the place of honour, that on the right of it the second, that on the left the third. Diplomats in the East, however, who have managed by desperate manœuvring to get on the right-hand of the Grand Turk, have been mortified to sickness by learning that, among Eastern nations, the left-hand side is the place of honour:—

"Now for a puzzle. Suppose a band of well-wigged diplomatists to be seated at a long table, two sides of which are precisely equal. Their ideas are all dated 1801 of course, and they are met to take counsel for the peace of the world. Very good! The well-wigged diplomatist who has just been slightly inconvenienced by having sneezed out a jovial trio of false teeth, on which he has relied to do the smiling part, is at the head of the table. The man on his right, who seems kept from doubling up by a most portentous cravat, holds the second place, and hard work he has had to get it, having been twice winded by a person who seems all snuff and nose, and who would infallibly have got the second place, but that somebody trod on his favourite corn during the general scuffle at the door. The second man on the right-hand side is the third in rank, and the second man on the left is the fourth, and the third man on the right is the fifth. * * This is really the principal business, all the rest is mere wax and parchment,—and as for the blood and money, we can sing the songs of Dibdin and Campbell till we are quite in a patriotic glow about it."

At Constantinople the reception of ambassadors has lost its dignity. The Sultan is lectured by them, says "The Roving Englishman," as though he were a criminal, and the "representatives of the Great Powers" are crowded together without ceremony or precedence. In another quarter of the globe the Sultan's viceroy has been imposed upon by superior impudence rather than by superior power:—

"A certain M. le Coq was sent on a mission to Morocco, in order to recover indemnity for six Belgian vessels which had been plundered by the Moors. Fully persuaded that neither the sultan or his ministers knew half as much about Belgium as we know of the moon, he resolved gradually to enlighten them on the subject before entering on the business of his negotiation. At Gibraltar, therefore, he purchased an immense map, which he caused to be brightly coloured, and on which Belgium appeared one of the largest kingdoms of the earth. France, Holland, and Germany, were almost entirely swallowed by the 'Royaume de Belgique' of M. le Coq. Having thus secured his country so favourable a position, it was necessary to explain how it got there, and as an illustration he chose the recent case of Algiers, the only state in the world of which the sultan or his ministers had probably any real knowledge. So the fluent tongue of M. le Coq proceeded to tell the sultan and his oozer that a contemptible people called the Dutch had in former times assailed the renowned kingdom of Belgium, much in the same way as that pestilent race the French had recently attacked Algiers. In the end, however, they had met with the fate which would infallibly await the French, and had been driven like chaff before the wind by the true believers of Belgium, who had thus

recently regained their country. The sultan and his court were so enchanted by M. le Coq's historical knowledge and excellent principles, that they at once resolved to comply with his request, and entertained every proper respect for the kingdom of Belgium for some time afterwards."

The reader knows by this time in what manner he will be informed and entertained by "The Roving Englishman," who has produced this pleasant book. We must, however, enter a protest against one opinion, that it is a disgrace to any diplomatist to fail in a mission with justice on his side. The world would not be what it is if the whole, or the greater part, of this proposition were true.

Autobiography of Charles Caldwell, M.D. With a Preface, Notes, and Appendix, by Harriot W. Warner. Philadelphia, Lippincott & Co.; London, Trübner & Co.

HERE is a book which, in England, must dispense with many readers. Yet we have had pleasure in going through it; because it is a pure example of prosy, old-fashioned American style. Dr. Caldwell appears to have imbibed his notions of style from the sources whence Mrs. Mercy Adams drew the hoop and high heels (as it were) in which—when writing letters—she paraded the sweets of friendship and the vicissitudes of life. His philosophies and his language alike had little in common with those of the modern transcendentalists, whose opinions and utterances figure so strangely in the annals of modern American intellect. Dr. Caldwell's pomposity and verbosity—his vanity and want of good manners—have amused us as so many relics of a past time; and they have amused us all the more, because they were mixed up in their owner with such better qualities as sense, independence, and thirst for knowledge.

At the end of sixty-two pages of reasons for writing an autobiography and other preliminary matters, Dr. Caldwell informs us that he was born, in 1772, on a farm in Virginia. He lost his parents early,—early acquired those habits of self-reliance and self-cultivation, the fruits of which are everywhere present in this volume, in spite of the pedantic importance of its writer,—was early placed at the head of "The Snow-Creek Seminary"—a grammar-school, situated in a "remote and healthy section of the State"—which contained several pupils from five to ten years older than their master. An overbearing pedagogue must Dr. Caldwell have been, if the biographer's style was prophesied by the *Dominie's* demeanour.—

"In the government of the institution [says the Memoir] I found no difficulty. Discarding entirely the levity of youth, in which I had never but very moderately indulged, and assuming a deportment sufficiently authoritative, mingled with affability and courtesy of manner, I commanded, from the first act of my official duties, the entire respect and deference of my pupils. The elder and more intelligent of them conformed to order and good government from a threefold motive—the decorum and propriety of the measure, in a social and gentlemanly point of view—a conviction that submission to rightful authority is a moral duty, which cannot be violated without disrepute among the enlightened and the virtuous—and a sentiment of self-interest; for they had the sagacity very soon to perceive my ability to bestow on them lasting benefits, and my resolution to do so, provided they should deserve them."

The above paragraph is an average specimen of Dr. Caldwell's manner. While oppressing his pupils (for it is impossible to conceive that the boys of Virginia were not oppressed by one so weighty in his wisdom), the young schoolmaster continued to gather food for the ideas which were to be expressed in

these volleys of solemn language. He "perused the Book of Nature," as well as printed books,—he was "able to hold at times a moment of light and sportive intercourse and dalliance with the Muses." "Having never designed to officiate as an instructor of youth for more than a few years," by way of preparation for choice of a profession (!)—when the time of selection came, he determined, "although originally laid out to become a preacher," first, "to decline the drudgery of all civil vocations, or to serve his country in a military capacity,"—and, subsequently, "to devote himself to medicine." While studying the healing art at Salisbury, Dr. Caldwell, like other medical students, had adventures. No "wild oats" did he sow; but "the tattle of the town" averred that a certain fair Lady preferred him to a certain friend, Henderson, who was wooing the Lady. Henderson became jealous.—

"His awakened suspicions and fears on the subject he had the candour or the folly (I hardly know which to call it, but it was probably an amalgamation of both) to impart, under great agitation to me. For his groundless, and, toward me, most wrongful suspicions, I rebuked him sternly,—perhaps acrimoniously,—withdrew myself in a great measure from his society and that of his sister's family. * * In this condition of things, which, to him, somewhat inclined as he was by nature to melancholy, appeared to be hopeless, he became spiritless and gloomy, neglected law, literature, and social intercourse, and was at length attacked by what his physicians denominated a brain fever,—in language more intelligible perhaps to the mass of readers, by a febrile affection accompanied with delirium."

We must refer all such readers as love long-winded sentiment to this 'Autobiography' for the end of the story. Another passage of the Doctor's youth was his commanding a troop of Light Dragoons, who enrolled themselves in the autumn of 1792 to escort General Washington on one of his progresses through their county. On meeting this great man, the fluency of Caldwell, which "never had previously quailed before anything earthly," was interrupted. He became actually giddy, and forgot his address. Presently recovering himself, however, he began to harangue—astonished Washington by showing himself better acquainted with several events of the Southern revolutionary war than the General—was complimented in return for his "honourable and exemplary deportment as an officer,"—and Liberator and Dragoon parted with such emotions as should accompany the parting of two great men who understand each other.—In the same year Caldwell arrived in Philadelphia. With this settlement in Penn's city the old-young physician's professional life began. The reader is referred to his 'Autobiography' for complacent narrations of the manner in which the Doctor tilted, with a spear of weight and victory, against the bulrush of Dr. Rush on medical questions,—for the manner in which Caldwell's courage discomfited the elder physician's insincerity,—for the vehemence with which he engaged in scientific controversy (he assures the awe-stricken public, by the way, that he did not kill Dr. Smith and others by the "severity of his pen," as has been maliciously charged against him),—for the energy with which he bearded, knocked down, "shut up," and flung over rebellious audiences, who had prepared, cabal-wise, to insult him when he presented himself as lecturer. The lighter graces and occupations of our ponderous Doctor must be told in one of his most artistic paragraphs.—

"The amusements which an individual selects and enjoys are as illustrative of his character as are the studies he cultivates and delights in, the business he pursues, or the action he performs. Perhaps they

are in some respects even more illustrative of it. The reason is plain. The selection of them is more voluntary—freer, I mean, from constraint. Acts of business are not unfrequently the result of necessity; but amusements are always the issue of choice. It will not, therefore, be deemed inappropriate in me to state that my favourite amusements were the theatre and dancing. Fencing being at once an amusement and an invigorating and useful exercise of the body, and chess an amusement and an exercise somewhat strengthening to the mind, I indulged in them occasionally for several years subsequently to my commencement of the practice of my profession. Finding, however, as my professional business increased both in quantity and the space of the city over which it extended, that they were likely to occupy too much of my time, I suddenly abandoned them, and seldom, if ever, afterwards played a match at either of them. This change in my habits and associations I could not have made so promptly and entirely as I did, had it not been for the strength of my will, and its arbitrary sway over my whole being and actions. Nor, notwithstanding the decided supremacy of that power, and the obedience to it to which the others had been, for no inconsiderable time, accustomed, was the change effected without reluctance and regret. For, in both forms of exercise I was so dexterous and celebrated as to be very rarely otherwise than victorious in the contest. And of that I had sufficient weakness to be proud. And of my standing as a chess-player, I shall only say that Dr. Bollman (who attempted the rescue of the Marquis De Lafayette), General Harper, and myself, were acknowledged to be the three ablest players in Philadelphia, and, as was believed at the time, in the United States. Yet so essential to dexterity in all things is practice, that an entire neglect of those accomplishments for forty-four or forty-five years has utterly deprived me of the last relic of ability in them. So complete is this deprivation that I have even forgotten the powers and movements of the several chess pieces. And though I retain a perfect remembrance of all the guards, passes, and feints in fencing, and am far from being deprived, by time, of the sight, strength, and action of a very tolerable fencer, I cannot, with any show of dexterity, execute the simplest of them."

—Laughable as the above will seem to those loving a laugh, the man who wrote it had true mettle in him. Absurd though his phrases were (and more absurd his politeness, as we shall show anon), Dr. Caldwell was an American of whom America may be proud. But with his scientific career and services we cannot further concern ourselves:—enough by way of a closing extract to give his own account of his own graceful meeting with a distinguished woman in Europe when the time came for him to make "the grand tour"—during which he rebuked the bad manners of Abernethy—weighed our statesmen in the *Caldwell* balance—and judged our manners, politics, and scenery. Mr. Lawrence gave him several introductions in London.—

"One of these, whom I am bound to mention in terms of peculiar kindness and the most exalted estimation, was Mrs. Somerville, celebrated for her attainments and writings in several arduous and elevated branches of science, especially in Astronomy and Physical Geography. My first interview with that extraordinary woman made on me an impression never to be erased, save with the entire erasure of my memory. It occurred at the breakfast-table, in her own mansion, and was as follows. Dr. Somerville, her husband, was the attending physician of Chelsea Hospital, a celebrated institution which I had a wish to visit. Having been made known to the Doctor by my friend, Mr. Lawrence, I was kindly invited to take breakfast with him the next morning, and accompany him on his official visit to the hospital. On being ushered by Dr. Somerville into the breakfast-room, and introduced to his wife, I took, at her request, a seat by her at table. In neither her appearance nor manner was there anything to attract particular attention. She was rather below the middle size, plain but neat in her person and attire, and entirely free from affectation or pretence. Her eye was keen and rather playful; her countenance sprightly, but not beautiful. She con-

versed with fluency and ease, and did the honours of her table with good-breeding and taste. Her children, two or three in number, were of the party. Breakfast being finished, Dr. Somerville rose, and, telling me that he had a private visit or two to make before his visit to the hospital, familiarly added: 'I will leave you and Mrs. Somerville to take care of each other until my return.' The office being cheerfully accepted by me, I deemed it my duty to enter on the fulfilment of it, to the best of my ability, without loss of time. I accordingly commenced with the lady a conversation on the polite literature of the day, including the writings of Scott, Byron, Campbell, Southey, Wordsworth, and other living authors; and in both the knowledge and appreciation of those works I found her perfectly at home. Perceiving in a neat rosewood bookcase, the door of which was open, a few volumes on botany, ornithology, and zoology, I changed the subjects of conversation to those branches of science, and found her in them but little, if at all, inferior. I changed again to geology and mineralogy, and found her, in the knowledge of the latter, decidedly my superior. A volume of *La Place*, which caught my eye, directed my mind, for a moment, to the science of astronomy, respecting which she conversed with such a familiarity and compass of knowledge as might have led to a belief that she had just returned from a tour among the heavenly bodies. After a momentary silence, and looking at the lady in actual astonishment, I said to her sportively: 'Pray, madam, is there anything either in the world or out of it that is not known to you?'—'O, yes, sir; very many things.'—'I really know not, fair lady, what they are; I have run through the circle of my knowledge, and you have led me in every point of it.' After a brief silence, the lady rose, and asked me to follow her into an adjoining room, where I found suits of both chemical and mechanico-philosophical apparatus; and I soon perceived, by her conversation, that she was perfectly familiar with the practical employment of them. After loitering and conversing here a few minutes, we passed into another room, which was decorated by a number of very handsome paintings. Having examined them for several minutes, I pointed to three or four of them and said: 'These are very excellent copies of antiques. Pray, may I ask who is the painter of them?' As she did not reply immediately, I fixed my eye on her countenance, and observing it suffused by an incipient blush, I said, with a gentle tap on her cheek: 'This heightened rose tinge is a tell-tale; you painted them yourself'—which she acknowledged was the case. I then took her by the hand, and said: 'Now, madam, will you do me the favour to answer a single question: Pray, who are you?'—'I am Mrs. Somerville, sir.'—'I know that, madam, but who were you before you became Mrs. Somerville?'—'I was Miss —' (I have forgotten her maiden name), 'a little Scotch girl, a pupil of Dr. Playfair.'"

The above delicious morsel of diary justifies the tone in which we have called attention to one of the most ridiculous books ever published in memory of an enlightened man of science and a good citizen. Dr. Caldwell's executors should have taken better care of his character than they have shown by allowing the issue of a memoir so vividly recalling the duties and deeds of "P. P. Clerk of the Parish."

Paper and Paper-making, Ancient and Modern. By Richard Herring. With an Introduction, by the Rev. George Croly, LL.D. Longman & Co.

Dr. Croly, in an Introduction, written with all that reverend gentleman's pleasant vigour, suggests as a coincidence at once striking and significant, "that the art of making paper from linen fibre, and the art of printing, were discovered nearly at the same time, and were coeval with the first preaching of the Reformation, by Huss and Jerome of Prague." Either art would have been of little practical use without the other; "but at the exact period when Printing was given to the world, the fabric was also given which was to meet the broadest exigency

of that most illustrious invention." In a few words, the Doctor narrates how the invention of printing by blocks was improved by Gutenberg introducing moveable types,—by Faust discovering the art of casting the types in metal, and by Schœffer's brilliant thought, converted into so beneficial a reality, of using a punch for making the types themselves. In 1458 a printing establishment was formed in Mayence, where the art would perhaps have languidly existed, but for a blast of that war in which our Laureate discerns such profitable potentiality. "The storming of the city, by Adolphus of Nassau, in 1462, dispersed the workmen, and thus spread the art through Europe. It was thenceforth practised in Italy, in France, in Spain, and in England, (at Westminster, in 1475)."

Mr. Herring "begins with the beginning," and has a short essay on the origin of language; from this he traces the history, if we may so speak, of the various inventions resorted to by men whereby to stamp imperishable record of their thoughts, their hopes, their aspirations, and their deeds. This history is interesting; and we may remark, that in old days, as now, the paper-makers seem to have created colossal fortunes, while they who crossed the fabric with the stylus, achieved no fortune but one of fame. Thus, we are told of a certain Firmus, a paper-maker, that he raised the standard of revolt in Egypt against the Emperor Aurelian, and boasted that he could maintain an army solely from the profits of his paper trade! What a radical newspaper this Firmus would have set up against the powers that then were, if he had only known to what purposes paper might be turned! But the hour for the "Press" had not yet arrived, and the "Firmian Flagellator" may be reckoned among the great facts recorded by the comic poet, who gave a rhyming narrative of incidents that "would have been so, if they hadn't been otherwise." On the subject of the first paper-mill erected in England, the author says:—

"With reference to any particular time or place at which this inestimable invention was first adopted in England, all researches into existing records contribute little to our assistance. The first paper mill erected here is commonly attributed to Sir John Spielman, a German, who established one in 1588, at Dartford, for which the honour of knighthood was afterwards conferred upon him by Queen Elizabeth, who was also pleased to grant him a licence 'for the sole gathering for ten years of all rags, &c. necessary for the making of such paper.' It is, however, quite certain that paper mills were in existence here long before Spielman's time. Shakspeare, in the second part of his play of Henry the Sixth, the plot of which appears laid at least a century previously, refers to a paper mill. In fact, he introduces it as an additional weight to the charge which Jack Cade is made to bring against Lord Say, 'Thou hast most traitorously corrupted,' says he, 'the youth of the realm in erecting a grammar school, and whereas, before, our forefathers had no other books but the score and the tally, thou hast caused printing to be used, and contrary to the king, his crown and dignity, thou hast built a paper mill.' Understanding that some five-and-thirty or forty years since it was asserted by the then occupier of North Newton mill, near Banbury, in Oxfordshire, which at that time was the property of Lord Saye and Sele, that such was the first erected in this country for the manufacture of paper, and also that it was to that mill Shakspeare referred in the passage just quoted, I recently communicated with Lord Saye and Sele as to the plausibility of the supposition; remarking at the same time as I would now, that although it was of course quite impossible to award the immortal Bard great credit for chronological accuracy, it must, I thought, be admitted, that so marvellous an invention, unless really in existence, could not by any possibility of conception have been conjured up even to supply the unlimited necessities of the poet's strain. His Lordship, how-

ever, at once terminated the probability of this mill taking the precedence, even of Sir John Spielman's, by informing me that the first nobleman succeeding to that title who had property in Oxfordshire, which he acquired by marriage, was the son of the first Lord Say, to whom Shakespeare makes reference."

Mr. Herring is amusing when describing the names of different sorts of paper. Three are derived from the marks applied by paper-makers to distinguish their respective productions. The water-mark of "an open hand, with a star," in use as early as 1530, probably gave the name to "Hand" paper;—"Pot" paper was distinguished by a jug;—"Foolscap," which now bears "Britannia, or a lion rampant, supporting the cap of Liberty on a pole," is no satirical allusion to such cap, but was originally given because of the former device of the "cap and bells." Mr. Herring traces the term "Cap" paper to the jockey-cap, or something like it, in use when the first edition of Shakespeare was printed;—and the term "Imperial," he thinks, was originally applied to the finest specimens of papyri. This word is still applied in Austria to nearly everything which is supposed to be the best of its sort; and they who have dined at Daum's will not forget the "Imperial chops" and the "Kaiser-cotelettes." "Post" paper received its name from the post-horn which used to be impressed where the word "Bath" now stands,—a word, by the way, which does not certify that the paper was made at Bath. In illustration of water-marks, we quote an apt anecdote.—

"The celebrated Curran once distinguished himself in a case which he had undertaken, by shrewdly referring to the water-mark, which effectually determined the verdict. And another instance, which I introduce merely in the form of an amusing anecdote, occurred once at Messina, where the monks of a certain monastery exhibited, with great triumph, a letter as being written by the Virgin Mary with her own hand. Unluckily for them, however, this was not, as it easily might have been, written upon the ancient papyrus, but on paper made of rags. On one occasion a visitor, to whom this was shown, observed, with affected solemnity, that the letter involved also a miracle, for the paper on which it was written was not in existence until several centuries after the mother of our Lord had died."

We cite one more anecdote, from the instructive chapter on the Colouring of Paper,—and which adds another proof to the many already existing, that various useful results have been accomplished by accident.—

"The practice of bluing the paper pulp had its origin in a singularly accidental circumstance, which not merely as an historical fact, but as forming an amusing anecdote, is perhaps worth mentioning. It occurred about the year 1790, at a paper-mill belonging to Mr. Buttenshaw, whose wife, on the occasion in question, was superintending the washing of some fine linen, when accidentally she dropped her bag of powdered blue into the midst of some pulp in a forward state of preparation, and so great was the fear she entertained of the mischief she had done, seeing the blue rapidly amalgamated with the pulp, that all allusion to it was studiously avoided; until, on Mr. Buttenshaw's inquiring in great astonishment what it was that had imparted the peculiar colour to the pulp, his wife, perceiving that no very great damage had been done, took courage and at once disclosed the secret, for which she was afterwards rewarded in a remarkable manner by her husband, who being naturally pleased with an advance of so much as four shillings per bundle, upon submitting the improved make to the London market, immediately purchased a costly scarlet cloak, (somewhat more congenial to taste, in those days, it is presumed, than it would be now,) which he carefully conveyed home, and presented with much satisfaction to the sharer of his joy."

We close this useful volume with the remark, that a chapter might have been supplied on the early printing-offices. There were some fine

scholars in the "readers' rooms, especially, of those times; and even at the period of the Etiennees, scholarship was required in the "chapel" itself; and the apprentice of Robert or Henry would have received an admonitory but heavy-handed cuff had he dared to make the simplest request in any other tongue than Latin.

A General Survey of the History of the Canon of the New Testament, during the first Four Centuries. By B. F. Westcott, M.A. Cambridge.

We have, on a former occasion, pointed out how deeply important it is, both to the Church and the community at large, that the series of Theological Manuals now publishing at Cambridge,—books designed to form the theological mind of the next generation,—should be written by master hands. The subject dealt with in the present volume is perhaps the most important of the whole. It is an investigation of the question, how and when the books of the New Testament were recognized by Christian believers as constituting an inspired rule of faith? Who settled the contents of the Canon, admitting some books and rejecting others, determining by his authoritative fiat the question of inspired or uninspired, and thus giving to all future ages a rule and form of faith? Tradition answers these questions in its customary simple way. It fixes upon a person, and, without rhyme or reason, assigns the work to him. The same authority taught men to believe that each one of the Apostles contributed a paragraph to the so-called "Apostles' Creed," and made Ignatius the introducer of antiphonal singing, on the authority of a glimpse into heaven, during which he heard "the angels thus singing to the Holy Trinity";—tradition, ever fertile, and occasionally poetical, selected the last survivor of the apostolic band—"him who saw the Apocalypse"—and assigned to him the responsibility of fixing the contents of the New Testament. The present author conducts his inquiry more philosophically. Judging by what he thinks likely to have been the case—for historical evidence there is next to none—he gropes back into that early period in which the Gospel was oral and not written. Amongst the earliest believers, the great facts of the life of the Saviour were subjects of notoriety; and the Apostles were still present, authenticating those facts by their personal testimony, and building upon them and their connexion with Judaism the scheme of doctrine. After the death of the Apostles, Mr. Westcott imagines that there was a period during which "the traditional rule of Apostolic doctrine was generally held in the Church." This he supposes to have been "the condition of the Church" under the immediate disciples of the Apostles. But as soon as they "had passed away, it was felt that their traditional teaching had lost its direct authority; heretics without the pale, and dissensions within it, impelled the Church to have recourse to its documents. Then it was that the books in existence in various places were gathered together, the Church determined for itself "a fixed literature," and the Canon was thus established. Such—if we understand it rightly—is Mr. Westcott's theory. Many people will dissent from it. The intermediate period of "traditional rule" will excite a host of objectors. The existence of such a period, it will be said, can only be accounted for upon the very unlikely supposition, that after the written rule had once been given, it was permitted to fall out of knowledge in a Church which, nevertheless, continued to act in conformity with it.

And if it be alleged that a time of discord

was necessary to convince the Church of the value of the written rule, it will not be allowed that such a time did not arrive until after the immediate disciples of the Apostles had been called away. The Apostles themselves testify in their writings to the existence of such a time in their own days: therefore, the necessity for the written documents arose immediately, and has never ceased. The intervening placid period of "traditional Rule" will be disallowed as a mere imagination. Mr. Westcott says, that "as long as the traditional rule of apostolic doctrine was generally held by the Church, there was no need to confirm it by the written rule." Here, again, he will find many opponents. It will be said, that according to this supposition, the Apostles and Evangelists had given a written rule which was not needed, and was consequently disregarded. This will be thought unlikely, and even contradictory to the contents of the written rule itself.

Mr. Westcott's theory with respect to the growth of the notion of the inspiration of the written rule will be no less strongly objected to. "It cannot be denied," he says, "that the idea of the inspiration of the New Testament, in the sense in which it is maintained now, was the growth of time." In what way, then, it will be asked, were the books of the New Testament regarded by the first Christians? Mr. Westcott replies:—"Without any exact sense of the completeness of the Christian Scriptures, they still drew a distinct line between them and their own writings. As if by some providential instinct, each one of those teachers who stood nearest to the writers of the New Testament plainly contrasted his writings with theirs, and definitely placed himself on a lower level." How far this explanation differs from what "is maintained now," we cannot take upon ourselves to say, but it clearly expresses that the earliest Christian writers gave evidence by their quotations from the Scriptures, both of the Old and New Testaments, that they accepted them as authoritative. It will be very difficult to prove that the ground of this distinction between the Scriptures and other writings was not a belief in their inspiration. All, or all the most important, New Testament Scriptures came from persons believed to be generally inspired, and they were accepted by those to whom they were first communicated as a class of compositions totally distinct, in point of authority, from all ordinary writings. They were put upon a par in this respect with the Jewish Scriptures. The common sense of Christians at large easily distinguished between the genuine books and those of doubtful authenticity, which were subsequently obtruded. Some books which were at one time, or amongst some Christians, received, and amongst others doubted, came ultimately to be universally accepted, and thus by common consent, and not by the interposition of any Church authority, the Canon seems to have been formed.

Another question intimately connected with this subject is, What was the origin of the Apocrypha? Mr. Westcott conjectures that "as soon as the Christian Church had gained a firm footing in the Roman Empire, it required what might be called an educational literature; and an attempt was made at an early period to supply the want of books, which received in a certain degree the sanction of the Church." Hence, in Mr. Westcott's view, arose the "Apocryphal writings," which, he says, were "added to manuscripts of the New Testament, and read in churches, and the practice thus begun continued for a long time." Mr. Westcott illustrates this theory by the doctrine of the Church of England, which allows the Apocrypha "to have an

ecclesiastical use, but not a canonical authority. They are profitable for instruction—for elementary teaching, as is said of the Shepherd of Hermas,—but not for the proof of doctrine." Neither the early Church nor the Church of England will gain much in general estimation either by Mr. Westcott's theory or his illustration.

Fully allowing Mr. Westcott's learning, and the scholar-like way in which he has treated his very difficult subject, there is too much theory in his volume for it to accord with our notion of a judicious and wholesome elementary book. Such a serious question would have been treated more conformably with the wants of students if the evidence had been brought together and simply commented upon. Mr. Westcott starts with the idea of connecting "the history of the New Testament Canon with the growth and consolidation of the Christian Church," until, according to his notion, the different churches "were all harmonized in a universal Creed, and witnessed by a completed Canon." Throughout his book he has worked up to this notion, and has, we think, occasionally been led by it a long way from his proper subject.

It is very pleasant to find him bearing testimony, in his Preface, to the value of Lardner's "Credibility." Imperfect as, of course, he esteems it to be, for the reason that would have influenced Lardner to pronounce the same judgment upon Westcott, "it is," Mr. Westcott says, "unless I am mistaken, more complete and trustworthy than any work which has been written since on the same subject." Theological literature would gain greatly by the more general diffusion of this candid spirit amongst the ministers of differing sects.

History of the Constituent Assembly—[*Histoire des Constituants*]. By A. de Lamartine. 4 vols. Paris, Pagnerre.

THE English translation of this work [see *Athen.* No. 1363] has, we infer, been discontinued. The narrative, now complete, is carried on to the death of Mirabeau, which was M. de Lamartine's point of departure in the 'History of the Gironde.' Twelve volumes are thus devoted to the five years of the French Revolution; in eight others M. de Lamartine describes the fall of the Empire, the events of the first and second Restorations, and the interval of the Hundred Days. But the space allotted to that brief period which elapsed between the convocation of the States-General and the fall of Robespierre is not disproportionate to the magnitude of the public drama which it exhibited. Each chapter of the story ends with a climax, not to be found in the dull annals of many nations during centuries. Perhaps the years 1789 to 1791 include the most remarkable—not the most startling—incidents of the history. This was the intellectual, the moral epoch of the Revolution,—the time in which those principles arose that annihilated every tradition in France. Afterwards, when the Clubs became parliaments, when the throne became a scaffold, when great acts of justice were associated, as they have since been confounded, with desperate acts of revenge, there was a marvellous display of energies, virtues, passions—all the phenomena of human nature; but while the Constituent Assembly reigned in Paris, and while Mirabeau reigned in the Assembly, the eight hundred years of the monarchy reached their actual and appropriate end.

M. de Lamartine writes of this era, as he is wont to write, in a rich and glittering style, appealing to the emotions, to the fancy, to the sensibilities of his reader. He cites few authorities, and enters into no criticism. His book

might be called 'A Vision of the Revolution,' it is so free, so elegantly decked out with imagination, so fantastically brilliant, so chivalrously sentimental.

The narrative, where we left it, had dismissed Mirabeau for a time from the front of the scene. The Assembly which he had inspired had defied the blow which the Court, in its incorrigible duplicity, had prepared. It is not at the commencement of a revolution, says M. de Lamartine, that a *coup-d'état* succeeds. A people's hope is not to be treated with such effrontery as its despair. In despair, Rome submitted to its Cæsar; but France, when the Count of Artois planned a massacre, was full of enthusiasm, of faith, of courage. Two hundred thousand men, armed and unarmed, rushed to the Hôtel de Ville, obeying one impulse, but recognizing no leader, for Mirabeau was absent,—Camille Desmoulins was powerless,—Marat had not yet acquired his power,—Danton was no more than a noisy and reckless debater,—and it was thus uncommanded that the multitude took its way to the Bastille, and destroyed that symbol of the monarchy. The cells of the prison were empty; but their graven stones, their chains and rings of iron, their relics of cruelty, their low penal doors and ponderous keys supplied the population with a justification of its violence,—for in assailing Louis the Sixteenth they avenged themselves on the whole Bourbon line. Yet if anything is clear from this and all other histories of the Revolution, it is that the French nation, represented by the Assembly, was unwilling to injure the King. When the nobles and the clergy had been abased,—when the unhappy Foulons, Favras, and Berthiers—the mimic Straffords of France—had perished,—the monarchy was respected as an inviolable institution. Louis, in all his deplorable repetitions of hypocrisy, was trusted,—the people returned to him whenever he promised not to massacre or to betray them,—they would not finally break with him,—and it was only because his moral nature was incapable of honesty, as his mind was impervious to reason, that at last he was dragged to ruin.

These characteristics of the miserable prince are amply illustrated by M. de Lamartine; who, nevertheless, perseveres in ascribing his misfortune to his excessive delicacy of conscience and to his saint-like sense of honour. That he was half an idiot is undeniable, as well as that he was a bigot; but that his stupidity or his fanaticism led him to err on the side of good faith, it is impossible to believe. His own view of the Revolution, as reported by one of the Queen's ladies, is given in a narrative to his son, which reminds us of Charles the First's liturgical speech.—

Listen, said he, and remember. I desired to mitigate the sufferings of the nation; I required money to pay the debts which had been contracted by my ancestors, and to improve the public finances. I therefore demanded taxes from those whose privilege it was not to pay any. They refused to contribute, and my parliament supported them against my ministers. I then summoned to Versailles the leading men of every city and province to deliberate with me on the means of establishing a better administration in the kingdom. Instead of thus deliberating, they put forward demands to which neither for myself, nor for my successors, could I consent. Factious individuals excited the people against me, and they came to Versailles in crowds to murder my guards, to drag me out of my dwelling, and to become masters of my person and my family. It is not the people, however, that has willed this; they, on the whole, are amiable, just, and well-meaning; if they knew all that is in my heart, they would defend instead of attacking me; but wicked men have come between me and the nation.

This, says M. de Lamartine, was as much as a reigning king and an heir-apparent could be expected to understand.

The feud between Mirabeau and Necker seemed to widen the stage for Lafayette. This singular man, clothed with American *prestige*, is much disparaged by M. de Lamartine. He says, he followed events through fear that he might cast his lot with a minority:—

He did not pass over to the Commons, with Mirabeau, by a theatrical repudiation of his caste. Even at Versailles he only joined the plebeian ranks at the time when the Court nobles joined them in a mass at the King's instigation. He was not an insurgent on the 14th of July, or a conqueror at the Bastille. When proclaimed at the Hôtel de Ville leader and moderator of the civic army, he accepted with reserve this revolutionary acclamation; and only assumed the command of the National Guard when his title had been ratified by the King. He was a man bold in his ideas, but circumspect in his conduct, who took care to set his ambition on a double basis. In his youth he set one foot on America, and one on France; one foot on the royal, and one on the popular authority; still later, he kept one foot on the monarchy, while he planted the other on the republic.

Marat is painted in pure invective.—

A Swiss by birth, a surgeon by profession, an obscure writer impatient of his obscurity, who sought notoriety and scandal instead of fame. No man of the age nourished in his soul a more sombre and concentrated detestation of society, because it gave no place to his scientific systems, to his social ideas, or to his suffering pride. Suddenly, he was thrown into his congenial element, in the midst of the ruins and anarchy which the revolutionary turmoil had accumulated at his feet. Of these ruins he quickly constructed a tribune for himself, for he by instinct divined that it was his part to be the Marius of the Faubourgs. His seditious fury was more dangerous than that of Camille Desmoulins, because it was more sincere. Fanaticism is the moving force of revolutions. Marat was the fanatic of the people; the people were not long in becoming the fanatics of Marat. His style,—uncultured, savage, keen,—abounding in vulgar images, derived from tears and blood, yet softened by passionate and earnest declamations on social iniquities and on the scantiness of wages,—was as the sigh of a woman when it touched on the unfortunate, but as the growl of a lion when it turned against the happy. He made himself, at once, a representative of public calamities.

This portrait of Marat occurs in M. de Lamartine's narrative near a passage from one of Mirabeau's speeches, in which the orator stated, by implication, that the Queen was "responsible to the law." To these words M. de Lamartine applies the term "blasphemy," though he himself accuses Marie-Antoinette of treason,—of treason against France for the sake of her family. If the Revolution was, as he describes it, "a philosophy in action," the inference is not very clear that Mirabeau blasphemed when he denounced an attempt to debauch the army and to promote massacre. Mirabeau's complicity in the Queen's intrigues, when he kissed her hand and exclaimed, "That kiss has saved the monarchy," is a spot on his fame which the writer carefully heightens, addicted as he is to eulogies of the Danubian beauty, with her blue eyes and pouting lips, so prominent in this History.

Pitt is exalted by M. de Lamartine as greater than Richelieu,—Burke as the Cicero of Great Britain. Fox he seems less to admire. With his delineation of Robespierre we were familiar through the 'History of the Gironde.' However, not to miss an occasion of portrait-sketching, he tells us once more of the slight figure, the feeble limbs, the shrill voice, the strangely-coloured countenance, and peculiar gait of that Tribune of the Terror. Indeed, the work is chiefly interesting for its processional series of groups and figures, drawn with felicity and

vigour, if not with historical accuracy. M. de Lamartine does not approach M. Louis Blanc as an historian; but he excels most of his contemporaries as a fanciful Bruyère, philosophizing upon character, in addition to his skill as a painter of effects, as a graceful, generous, romantic memoir-writer, who throws the "purple light" of his imagination over every subject he touches.

Gatherings from the Wine-Lands. Foster & Ingle.

THE lovers of fermented draughts have infinite variety, from wine to spruce-beer; yet it is matter of unprofitable discussion as to the inventors or discoverers of either beverage. The Chinese, who seem in their way to have begun everything and perfected nothing, except ivory puzzles, lay claim to the invention of wine. In the reign of Yu Ta the Great, who may be said to have lived at any time that may best please chronologers,—for they vary from B.C. 1357 to B.C. 2217, a rice wine was invented upon which the people got so uncomfortably exhilarated that a prohibitory decree was issued in consequence. The edict was not respected by many, and least of all by the Royal Brothers of the Moon; one of whom, Tay Kang, was banished, for the satisfactory reason that he had rendered himself imbecile by drinking the "delicious danger" to excess. If there was indifferent wine, there was a very superior wisdom among the Chinese; as one of their sages used to remark, if the Emperor does not put water in his wine, how will his people ever be able to put wine in their water?

But it is not our vocation just now to trace the origin of wine, either to sacred or profane discoverers. We may, however, just remark by the way, as proof that there is nothing new under the sun, that the method of imbibing that vinous preparation called "Sherry Cobbler," was practised by an Asiatic people, with respect to their barley wine, or in other words, strong ale. When Xenophon was leading his Ten Thousand and gaining immortality by the Retreat, he came upon a people whom he calls the Mosynœcians, and these made the Greeks as weary with laughing as they already were with marching and fighting, by drinking their barley wine through straws.

If we may believe the author of this volume, who gives a very wide range as to the locality within which the vine may be successfully cultivated, the English grape is not a fountain from which good wine ever sprung. There is, however, a Dorsetshire tradition which says that the vineyards at Durweston, near Blandford, produced fruit from which an exquisite wine was made. The author accounts for the alleged inferiority of our grapes by laying the blame on our much-abused sun. The want of brightness in the rays is the cause of failure in effecting that chemical process which elsewhere makes the grape "perfection." There are finer grapes grown in Sweden, we are told, than in England, partly because there is a longer continuance of bright rays, although obliquely shed, and partly because the winter snows guard the roots of the vines from an otherwise fatal degree of cold.

Those persons who modestly take white wine under the impression that it is less potent than red, will be surprised, perhaps, to hear that this is not the case. Generally speaking, white wines have more saccharine matter in them before fermentation (if we may so speak) and more spirituous matter afterwards, than red. The author, also states, as a result, we believe, of his own observation, that in the districts where white wines are exclusively drunk, the people are subject to nervous disorders, and that

delirium tremens prevails among them to a certain extent. But we may here more aptly notice a disease in the wine than one in the drinkers. We allude to the *Oidium*, or vine-plague.

"Like the malady which for several successive seasons almost annihilated the potato-crop, this strange disorder is obscure both as to its nature, its origin, its causes, and the treatment by which it may be removed or allayed. It is even difficult to point out any given direction which has been followed by the invasion of this scourge, or to fix upon any particular place or places in which it might be said to have taken its rise. It has been nearly simultaneous and widely diffused over a very large segment of the globe. As in the case of the potato disease, various conjectures have been put forward as to the nature of the *Oidium*. Some have attributed it to a microscopic insect; others to the deposit of a fungus; and others have sought to attribute it simply to the action of ordinary variations of moisture and temperature. But all alike are at fault. It is possible that insects may become associated with the progressive decomposition of fibre and fluid which characterizes it; but they certainly are not to be detected in the primary stage of the blight. As regards the fungoid developments which are symptoms of the malady, they evidently result from internal disorganizations, and not from external morbid causes. The symptoms by which this disease is distinguished consist, first, in stains and discolourations appearing in and under the bark of the young wood, which when ripe assumes a smutty, unhealthy appearance, instead of the ruddy sienna hue which it ought to exhibit. As vegetation progresses, the foliage and fruit advance to a point nearly of maturity, then suddenly languish, the berries becoming covered with a white powder like mildew, to which they are soon wholly converted, so as to collapse in mere dust. Sometimes a second and imperfect crop of fruit appears, and new shoots make a sickly attempt to vegetate. The characteristics of this malady partake of those of the cancerous and scorbutic diseases of the animal economy, with the addition of the well-marked features of epidemy, as evidenced in the disorganization of the fluids, the generation of morbid structures, and the ubiquity of the causes, which are obviously too general to be otherwise than atmospheric or electro-magnetic. The plants which seem the most robust are in many places more predisposed to become diseased. Various methods of treatment have been suggested, tried, and abandoned as useless; the only course which gives promise of any success being that of restraining vegetation by severe pruning."

The devastation has been widely spread; indeed, the disease may be called sporadic, and its fatality may be judged of when we state that the owner of a Portuguese Quinta, who used to draw from one of his vineyards 20 to 75 pipes of wine every year, drew but 3 last year, and that those were very bad in quality.

As we turn over the pages of this volume, which may be very fittingly called 'A Handbook of the Wine Countries,' we find it stated that Moselle is a more irritating and, at the same time, a less invigorating wine than Rhenish. Among the wines which traditionally owe their richness, or reputation for it, to particular circumstances, we may notice the wine produced near Basle, and which is known by the name of "the Blood of the Swiss." The vineyards producing it occupy the battle ground whereon, in 1444, sixteen hundred Swiss encountered the host of the Dauphin. The blood spilled there, and the buried "braves" of either army, are said to have fertilized the soil for ever. The Swiss, however, are not joyous drinkers even of their native wine. It is not that they drink less than more merry toppers, but they are too spiritually proud to rejoice over it. The Swiss Calvinists have succeeded in suppressing that right joyous "Vintage Festival" at Vevay, when "Mars, Bacchus, Apollo," and other exalted personages were carried in procession. The austere faction declared that it was impious thus to be grateful

(which nobody was) to Pagan deities; and even at festival time austerity imposed solitary drinking. "Wine maketh the heart glad," saith an authority which even the Swiss Calvinists respect. "It does nothing of the sort," murmur their practical commentators as they sip. The Pagan lawyers of Rome were far wiser when they shut up the law courts and made holiday during the whole vintage time. The thankless Swiss deserved to drink no better champagne than that described in the following paragraph.

"Champagne in this country is to some extent a sort of pass-word which conveys no idea beyond that of effervescence in wine, or in some other fluid prepared to imitate it. It serves to introduce a variety of inferior wines, whether from Germany or elsewhere, and which could not be passed off without being masked with syrup and carbonic acid gas. It is used to give character to native productions, in the composition of which grape juice rarely, if ever, enters. From Hamburg or Bremen an enterprising buyer would readily be accommodated with unlimited quantities of champagne made up to such a standard and without in the least taxing the energy or industry of the population of the Marne or any other part of France."

From the chapter which gives details of war in the vine countries we make extract of "a scene," which is laid at Rueda.—

"During the alternate occupation of this district, by the British and French troops in 1812, the soldiery of either party, who vied with one another in acts of daring and hostility in the field, more than once fraternized round the wine-butts. In the midst of their carousals they sometimes omitted to plug up the holes they had bored to draw off the precious liquor, and thus flooding the cellars in their intoxication they perished in the midst of the waste which they occasioned. The story goes that more than one of the worthy friars to whom these vaults and their contents then belonged, driven to despair at the exhaustion of their stores, joined savagely in the orgies, and like the invaders, were suffocated or drowned in their own wine. More than 1,200,000 gallons of wine of the choicest growths, and valued at between 4s. and 5s. a gallon (or at least four times its present price), are estimated to have been lost in these Bacchanalia; a circumstance which is now cited to explain the scarcity of vats whose contents date previously to 1814."

The author states that "Napier is mistaken" in his assertion, that the caves of Rueda were so well stocked "that the drunkards of the two armies failed to make any sensible diminution in the quantity."

In closing the volume we must record our dissent from all that is said touching the excellence of Masdeu,—if the wine so spoken of be like that unsuccessful speculation which, in this country, some years since, broke the heart of the speculator. We can hardly give credit to the story which records of such a judge as Mr. Forester, that he once mistook Masdeu for the finest Port that could possibly be tasted. Recollecting what the "old Masdeu" was in flavour and odour, we can only say that we should prefer linseed wine with an Arab, with the highwayman's jocularly allusive dish of fried hemp-seed by way of dessert.

OUR LIBRARY TABLE.

A History of the Christian Church. By Dr. Charles Hase. Translated by Charles E. Blumenthal and Conway P. Wing. (Trübner & Co.)—It is an honour to America to have been the first country to put forth a translation into English of the highly valuable work of Dr. Hase. We learn from a letter of the learned Doctor, addressed to his American translators, that an attempt to translate his work was once made in England, but was abandoned on account of its supposed inconsistency with the views of the Established Church. A similar attempt at a translation into French was relinquished on account of the difficulty of rendering the terse and compressed language of the original. Dr. Hase explains the object of his work to have been "to

compress the most perfect picture of the religious life developed in the Church in the smallest frame;" and hence, he says, "I was compelled to be very parsimonious in the use of words, and to refer to the original authorities for many things plain to the learned, but obscure to the learner." By "the learner" in this passage we presume Dr. Hase to mean the mere school-boy learner. We find in the book a narrative succinct, but not incomplete, and built in every part upon original or other trustworthy authorities. There is nothing in it to alarm the prejudices of the most attached adherent to the Church of England, nor indeed, so far as we have observed, are there extreme views upon any subject. A candid tone pervades the whole book. The author's reading is of that wide discursive character which distinguishes the students of Germany, and all parties may turn to his pages with confidence in his learning and candour. The original work has already gone through seven editions.

The Castles and Abbeys of Yorkshire: a Historical and Descriptive Account of the most Celebrated Ruins in the County. By William Grainge. (York, Simpson; London, Whittaker & Co.)—Yorkshire presents a multitude of interesting remains to the chronicler of ruins. Among those which have come under the notice of Mr. Grainge, it is sufficient to enumerate the Castles of Skipton, Richmond, and Scarborough, and the Abbeys of Fountains, Kirkstall, Jervaux, Whithy and Bolton—all well known to antiquaries and the lovers of the picturesque. To secure the accuracy of his descriptions of their present condition, Mr. Grainge states that he has visited "during the last two years—with one or two exceptions"—every castle and abbey he has described, "though some of them were only reached after long and toilsome journeys on foot." The book may be serviceable to the tourist. In the hands of a person better acquainted with general literature, it might have had higher uses. Mr. Grainge is still fond of the florid English which we noticed in his former work. If he does not take more care in the correction of the press he will be thought to have also a regard for false Latin.

The Failure of the Yan Yean Reservoir. By David E. Wilkie, M.D. (Melbourne, Blundell.)—The citizens of Melbourne, in Australia, have adopted, as a means of supplying themselves with water, the scheme of the Yan Yean Reservoir. There is a Chinese tone in the name, and something Chinese in the plan, for the natives of the Celestial Empire have always been famous for their artificial lakes and canals. But in the vicinity of Melbourne there is a natural basin, with a surface of about seven millions of square yards, which it is proposed to convert into a reservoir, to receive the greater part, if not the whole, of the watershed of the Plenty Territory. Obviously, the Plenty takes its rise in Mount Disappointment; but the administrators of Melbourne were not deterred from their project by the doubts and difficulties in view. Dr. Wilkie, in a paper read before the Philosophical Society of Victoria, undertakes to show that the works have failed, because they have been carried out in defiance of scientific principles, and advises that, at least, the capabilities of the reservoir should be tested before twenty miles of pipes are laid down. His remarks, in their present pamphlet form, will be studied with interest, as a contribution to the natural history of Australia, since they refer to the geological phenomena, the geographical configuration, the climate, and averages of rain, dew, and evaporation, throughout the Victorian territory.

The Village Lesson Book, for the Use of Schools. By Martin Doyle. (Groombridge & Sons.)—A plain and pleasant little book for the use of village schools. It is an agricultural manual, epitomized and simplified. Almost any boy who can read will understand its clear instructions. Mr. Doyle explains the duties of bird and pig keepers, cowherds and shepherds, carters and ploughboys, and goes on to give directions for the measurement of land, for digging, and for general field labour. His small volume, didactic though it be, is the reverse of dull. Illustrative anecdotes and morals enliven the series of lessons. As a book for rural schools we know of none better. Mr. Doyle has

the tact to convey practical information in the most agreeable manner.

Canada: an Essay. By J. Sheridan Hogan. (Montreal, Lovell.)—The latest developments of Canada are vigorously and picturesquely described by Mr. Hogan. We derive a high idea of the colonists' prosperity from the statement, arithmetically corroborated, that, at the average, every Upper Canadian family of five persons possesses 200*l.* of property, or 40*l.* to each individual, and this in a land where wealth is not frozen in isolated heaps, but diffused and spread like a benevolent influence of nature over the general social area. The Western Province, in 1829, was inhabited by less than two hundred thousand persons. The population has since increased by upwards of a million; but the Colony still invites centuries of immigration to fill its prolific valleys, to fish in its lakes, to hunt and hew timber in its forests, to add to the thronging crowds of its ports and cities. A territory sixteen hundred miles in length, with an average width of two hundred and thirty, including nearly three times as many acres as Great Britain and Ireland, will not be really populous until fifty millions of our race are fermenting with enterprise over its varied surface. Mr. Hogan's brilliant and encouraging picture is not vitiated by exaggeration, for though his language is florid, his authorities are substantial. We do not know, indeed, a better brief account of Canada than this, whether as a manual for emigrants, or as an addition to the Colonial Library. Among its most interesting chapters is one in which the growth of cities in the United States and Canada is compared. Boston, between 1840 and 1850 increased in population forty-five, New York sixty-five, and Toronto ninety-five per cent. In the thirty years preceding 1850, St. Louis increased fifteen-fold, Cincinnati twelve-fold, and Toronto eighteen-fold. Chicago and Buffalo, indeed, have exhibited powers of growth equal to those of any Canadian city; but the contrast displayed by Mr. Hogan is, nevertheless, astonishing. Mr. Hogan does not remember, perhaps, that in 1828 Mr. Warburton told the House of Commons that Canada was a colony which produced nothing but a few skins and some wretched timber.

The Home and Grave of Byron: A Complete Guide-book to Newstead Abbey and Neighbourhood. Illustrated. (Longman & Co.)—A romantic interest attaches to Newstead Abbey and its domain, independently of the "fitful fever" of Byron's life. Sherwood itself, the hunting-ground of our old yeoman chiefs, is a realm of legends and songs. The grey ruins, clad in green ivy, seem to haunt the forest with remembrances of the monkish age, when the lame and the blind received alms from the hooded friars. Then, little John Byron, with the great beard, seems to re-appear under the fantastic arches. Later, the Parliamentary cannon may be imagined trailed into the park to coerce the "Birons," who, with the King, rebelled against the constitution. Moreover, the "wicked Lord's" memory is tragic in its way. The compiler of the present "Guide" is an enthusiastic *cicerone*, and is careful to note every particular of history and tradition associated with Newstead Abbey. His description is animated and clear; and may well form part of the tourist's equipment when he rambles to Sherwood.

Dr. Cumming has published a volume entitled *The End; or, the Proximate Signs of the Close of this Dispensation.* He deduces from the Russian War, the abolition of the newspaper stamp, the recent earthquakes, and other incidents of the times we live in, that the catastrophe of creation is approaching. The work abounds in ingenious applications of facts to theories.—*An Essay on the Existence and Attributes of God*, by Patrick Booth, contains a logical analysis on the subject of pure theology.—*Parker's Parochial Papers* are continued, in *Confirmation*, which apologizes for that ceremony of the Church.—More polemical than apologetic is *The Godly Sincerity of the Prayer-Book Vindicated*, by Robert Salkeld, in reply to Mr. J. Ryle,—whose remarks on baptismal regeneration have offended the author.—Mr. Richard Harvey, Rector of Hornsey, pleads for the convicted Sunday Bill in *The Sabbath; or, Rest the*

Right of every Man, a particularly short sermon, preached in the Chapel Royal St. James's.—Mr. J. Douglas, of Cavers, prolongs his series on *The Coming of the Kingdom*,—and Mr. R. W. Morgan has *Schemes for the Reconstruction of the Church Episcopate and its Patronage in Wales*.—In *The Holy Flower-Show in Belgravia*, a Parishioner of St. Paul's, Knightsbridge, assails the inventions of Puseyism, and vigorously addresses himself to the courage of the laity.—Apart from disputed topics, Prof. Robertson, of Edinburgh University, has printed a lecture, *The Medical Profession the Complement of the Christian Ministry*.—Mr. Samuel Lyde repeats his *Appeal for the Answee of Northern Syria*, setting forth how he and his friends have established themselves in the Syrian hills to combat the belief of the people.—Relating to a personal question, Mr. E. Davies publishes *The Mission-House Letter*,—and the Rev. W. Wickenden one of his sad outpourings, this time headed *Revelations of a Poor Curate*. In 1846, he tells us, he resolved, in defiance of enemies, to obtain an independence. That object he has fulfilled, and many persons will say he has been lucky, though "shamefully neglected." To render himself "independent of the Bishops," he published twelve books, wrote with his own hand 27,670 prospectuses, and walked 65,700 miles.—A social question of a practical character is discussed by Mr. William Chambers in *Improved Dwelling-Houses for the Humble and other Classes in Cities*. Mr. Chambers describes "the Scottish Dwelling-House system," which he commends for adoption in England.—*Poverty Prevented and Affluence Acquired; or, Social Economy explained*, is the pretentious name of a pamphlet on Assurance and Friendly Societies.—*A Few Words about the Innates of a Union Workhouse* refer to the neglect which these "innates" experience at the hands of society.—*The Ninth Report of the Associate Institution for Enforcing and Improving the Laws for the Protection of Women* is a statement of the receipts and results of the year,—as is the *Twenty-Eighth Report of the Directors of the Murray Asylum for Lunatics, near Perth*.—Connected with lunacy, we have also Dr. Forbes Winslow's interesting paper on *The Case of Luigi Buranello, Medico-legally Considered*.

LIST OF NEW BOOKS.

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 Bayly's (A.) Pictures of Europe, post 8vo. 6s. 6d. cl.
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 Warren's and Pullen's Treasures in Needlework, 8vo. 7s. 6d.
 Zornini's World of Waters, 3rd edit. 8vo. 4s. 6d. cl.

AD NAPOLEONEM IMP.

NUMQUAM sponte aliquem quantantem sceptru videbo,
 Thura ferant alii, non ego thura feram.
 Sed foribus propere vivacem obtudere laurum,
 Verbaque (dis rata sint!) scribere pauca super.
 Tolle oculos, lege, Napoleon, confide fidei!
 Unicus sum redde; sum patria esse beatis;
 Redde quod abstuleris; da fortibus esse beatis;
 Nec fueris magno Napoleone minor.
 Deme sacerdotum dextris infame flagellum;
 Decute anhelanti Norica fræna Pado;
 Haud detrita gemat raptoris curribus Enna;
 Haud timeat domini verbera Partheneope.
 Dic "trana maria, Europe!" die "Roma!" resurge,
 Romuleaque domus, Dacia, vive memor!"

W. S. LANDOR.

* Colonia Romanorum militum Daciam occupavit.

FOREIGN CORRESPONDENCE.

Temple of Serapis, Pozzuoli.

Naples, September.

AN event has recently occurred here which must awaken the regret, if not the indignation, of the whole artistic and scientific world. The circumstances I allude to are connected with a new arrangement of the columns in the Temple of Serapis at Pozzuoli; and it is impossible to think of it without lamenting deeply that the superb ruins of this kingdom, so rich in antiquities, should be at the mercy of men who display the utmost ignorance of the first principles of Art and Science. I express myself strongly as the occasion seems to me to require, for this sacred spot, with its three grand columns, has now lost its character, and been transformed into a piece of mere patchwork. But to the point. The Temple of Serapis, built at a very remote period, has for many years been used as a place of deposit for marbles, fragments of sculpture, and columns, of which the precious columns of alabaster now in Caserta formed a part. In fact, everything of an antiquarian interest that has been discovered in this neighbourhood was placed within the precincts of this Temple, and lay here like the dry bones of an age past away until modern taste or caprice should restore them to a new architectural existence. The stranger who has visited Pozzuoli must well remember the interesting fragments which lay scattered round the lateral porticos of this ruin. So placed, they harmonized well with the spot; they seemed like the representatives of former magnificence, and their fragmentary forms breathed forth homilies on the littleness of human greatness. Well, our Neapolitan *savans* have "*changé tout cela*," and in the true spirit of a London bricklayer who sets about building a snug smoking-box for your small citizen, have set up the columns on end, and have transformed the Temple of Serapis into a Temple of Folly. Walk round it, and you will no longer recognize it—the spirit of the place has fled—it is no longer the solemn site of a venerable temple—it is a doll-shop—a toy which boys have put together on a fine summer morning "*pour passer le temps*." It is but justice, however, to state the motive which led to this ridiculous violation of the rules of taste and of Art, though the very exposition of the motive will render the folly of the proceeding only the more apparent. The entire area of the Temple is, as must be well known, under water, the drainage of which was deemed impossible without removing the fragments lying around. So in a happy moment, as happy a thought struck our *savans*, that it would be as well to stick them up on end and clear the space by improvising a new Temple. No sooner said than done. Now it should be known that the sea is much higher than the level of the Temple, and that from the high grounds around during the rainy season an ocean of water descends, which it is impossible to carry off. It may be taken out, but cannot be carried off, and with such an operation twice the number of prostrate marbles would not have interfered. There is nothing, therefore, to justify the act.

The Temple of Serapis was the hydrometer of the neighbourhood. A few words in explanation are necessary. It is believed to be an uncontroverted fact, that the Mediterranean has been subject to an ebb and flow, to be counted not by hours but by ages. These periodical movements were perceptible so far back as the times of the Romans. High and dry, on the coast, from Gaeta to Pozzuoli, there are large deposits of shells. Similar phenomena may be witnessed on the shores of the Tyrrhenian, the Ionian, and the Adriatic Seas, even up to Venice. Baïæ and Amalfi are, comparatively speaking, under water; and Signor Camera, the scientific historian of Amalfi, says, that there are legal deeds still remaining, which belonged to lands now under water. After various changes, the sea retired, towards the end of the sixteenth century. Now, again, it is "on the flow," and the rate at which it has risen during the last fifty years has been, I am informed, about half a palm a year. These facts have a remarkable interest and grandeur about them. The calculation

by ages seems to connect these localities, already so venerable for their antiquity, with Eternity rather than with Time. Then, the topographical speculations which they suggest awaken an interest and a curiosity no less intense. How different must have been the coast of Italy ages since, before the sea had swallowed up so many splendid monuments of Art! What vast changes may yet be effected by that gradual rise which is now going on! What may be Naples and Pompeii and all this glorious coast in a few years hence; and when this great secular tide begins to ebb, and the sea gives up its dead, what treasures of Art will be revealed to future generations! To note these changes, so pregnant with interest, and record them for the benefit of posterity, would be a vast and meritorious labour of science,—and yet it is such a labour that the new arrangements in the Temple of Serapis have a tendency to destroy. The columns, both prostrate and erect, were a species of self-registering hydrometer. At intervals, one marks the holes in them where, with the rise of the sea, "*mitili*" and "*foladi*" penetrated the marbles and made their temporary homes,—and, about forty palms high, are visible the last labours of these little animals to convey to a future age information of the turning point in the last ebb of the Mediterranean. The confusion, therefore, which has now been introduced destroys the certainty of this great natural hydrometer, and tears, as it were, from History a page which can never be replaced. By whose counsel this most wanton act has been performed I will not inquire; but in the interests of correct taste, art, and science, it ought to be denounced, so that men who call themselves *savans* may be deterred from committing future errors, if they cannot redeem the past. I must not leave this neighbourhood without looking in at the Amphitheatre, where men have been at work for some time,—and I regret to say that the same careless spirit and the same ignorance have presided here as in the Temple of Serapis.

The great effort of late has been to clear away the soil from the subterranean part. This has in a great measure been done; but it will be scarcely believed that what was taken out was thrown into the arena above, and a space which it had cost much labour and money to clear thus again filled with rubbish. The fact is, that there is little interest entertained for these matters at headquarters, and things of this kind, at least, are left to take care of themselves.

H.

OUR WEEKLY GOSSIP.

THE annual meeting of American men of science—the miniature "Association" of the New World—has just taken place at Providence. Some papers of interest have been read, and a wish has been strongly expressed in favour of still further cultivation of natural science in the schools and colleges of the United States.

Mr. Sylvester has been appointed to the Mathematical chair at Woolwich.

The Rev. Edward St. John Parry, M.A., Balliol College, Oxon, has been elected Resident Warden of the Queen's College, Birmingham.—The Rev. Burford Gibson has been elected Resident Mathematical Professor and Chaplain of the Queen's Hospital.—Dr. Jordan, Gold Medallist at the University of London, has been re-elected Resident Medical Tutor.

It is notified by the authorities of Trinity College, Dublin, that a special class is to be formed for those students who may aspire to serve in the Royal Artillery and Engineers. Two reverend gentlemen—Messrs. Galbraith and Houghton—have been appointed examiners.

The obituary of the week records the death, on the 10th inst., of the Rev. Dr. W. Stephen Gilly, who merits a niche in our columns as the author of 'Researches among the Vaudois,' the 'Life of Felix Neff,' and other works of a more strictly professional character. Dr. Gilly was educated at Christ's Hospital, in London, and at Catherine Hall, Cambridge, where he graduated in 1812. He died incumbent of Norham-on-the-Tweed, and a prebendary of Durham. His publication on the Vaudois gave rise to a public subscription on their behalf, which realized more than 6,500*l*.

The newspapers recently announced the death of Mr. Chambers Hall, a gentleman well known as one of the most intelligent collectors of objects *recherché* in Art. With a taste that was catholic, Mr. Hall sought every opportunity of enriching his portfolios or garnishing his walls with the choicest works; yet, while he disdained not Art in her lower tendencies, he had the greatest predilection for those schools in which beauty of form or nobleness of aim prevails. Ranging from Raphael to Ostade, his taste displayed itself in the acquisition of some of the finest drawings of the several schools,—many that were preparations for some of their most celebrated pictures. The void created by the demise of such a gentleman is not readily supplied,—for he was one of the few who possessed the knowledge, the fine taste, or the public spirit to collect works of the severer Italian schools,—and though, as has been observed, he was rich in works of the Dutch masters, he was one of the few Englishmen with a passion for, as he made the acknowledgment of his sense of, the superiority of the *spiritual* over the *material*. For him the selected forms of the Greek bronze, the Etruscan vase, or the Virgin Mother of the Italian had more charms than the materialism of the Dutch Vraw, the vulgarities of boorish manners, or the literal truths of still-life,—and when he sought these, it was in consequence of some victory achieved by the artist over the low or unpromising nature of the subject in the exhibition of some special mastery of technical management. Not restricted to subjects of history, Mr. Hall's taste led him to the acquisition of some remarkably fine examples of portraiture and landscape, recorded by the varied means of colour, the pencil, or the etching-needle. With a public spirit worthy of imitation, Mr. Hall sought not these for selfish or mere personal ends, as his patriotism and public spirit evidence by the munificent act which he performed a few short months previous to his death—having divided his collection between the Museums of London and Oxford. In thus making these valuable additions to the before-named depositories his example is no less instructive, for he had the gratification of living (though but a short time, it must be confessed) to enjoy the satisfaction to be derived from so liberal a deed. His donation to the Taylor Museum at Oxford was noticed in the columns of this journal at the time it was made,—it is, therefore, now only necessary to advert to it for the purpose of showing to what an extent Mr. Hall felt—as all thinking persons, well-wishers to the Art-knowledge of their country must feel—the necessity of cultivating at our Universities a taste for the *higher* branches of the Fine Arts. Without such education, it is hopeless to see our public buildings improved, to find members of the senate *au courant* with a Fine Art question when it arises, and to put an end to the system of jobbing which now like an incubus sits upon the shoulders of Art, whether it be a memorial statue or a public picture. Improvement in our artistic education at the Universities is the first step towards the proper ministerial direction of the minds and tastes of the masses.

The following note is from a Correspondent at Beyrout:—

Last month the French corvette *La Sémillante* passed by Beyrout on her way to Marseilles, having on board the sarcophagus found at Sidon, belonging to M. Périé. The inscription is in Phœnician, and has been deciphered by M. le Duc de Luynes, and the following is the translation from his French version:—"In the month of Bul, the 14th year of my reign, I, Ezman Azar, King of the Sidonians, son of Tebanad, also King of the Sidonians, son of Amestria my mother, great priestess of Esther, in Babylon.... spoke thus: 'In the flower of my youth, in the midst of the collars of my perfumed and wines, I was struck by death. From the funeral vault where rest my bones, which I myself caused to be constructed, I adjure all dynasties, all generations, and all men not to violate the place of my repose, not to open my tomb, not to load its stone, not to take away the offerings which are deposited therein. Near unto me is also the tomb of Amestria, my mother, great priestess of Astarbe (Astarte?) in Babylon, who caused to be constructed the temple of Baal in Babylon and also of Elecana, who made magnificent presents to the temple of and also of Elecana, who built the temple of Dan. I vow malediction to every dynasty, every generation, and every man who violates my tomb, or who raises the lid, or who takes away the offerings therein deposited. May his nuptial bed be sterile, my curse be upon him for ever in all his posterity, may he be extirpated from the earth, let him not be allowed to bury his mother

... for ... I, Aznan Azar, King of the Sidonians, son of Tehumad, King of the Sidonians, son of Amestria, my mother, great priestess of Eather in Babylon The rest of the inscription is effaced by time."

Mr. George Roberts, known to historical students by his collection of MSS. (to which Mr. Hepworth Dixon was indebted for so many facts in his life of 'Blake') and by his edition of Walter Yonge's Diary (published by the Camden Society), and to general readers by his careful 'History of the Duke of Monmouth,' announces a work on 'The Social History of the People of the Southern Counties of England in past Centuries.' The subject is a good one, and Mr. Roberts's studies and researches must have furnished him with much excellent material. In his prospectus, the author says:—"The manners and customs of our ancestors, their enjoyment of luxuries, or their deprivations; the sanitary condition of our towns; the price of provisions; medical practice, and similar subjects, are worthy of accurate investigation." Undoubtedly so. Hitherto the social history of England has received only slight and subordinate attention from our writers, though it is the most important part of our national story. One reason is, the ground is new. In writing Court, Military, or Political history, the materials lie at hand, in a hundred chronicles and compilations. The Social history has to be unearthed from beneath the dust-heap of ages. Mr. Roberts "is earnestly desirous of impressing upon the subscribers, that he is not a compiler from documents already published or known; but he claims to be the discoverer of much general county and borough history." Were it not so his title would be inappropriate and absurd. We may add, that the work is to be published by subscription—and as soon as a sufficient list of subscribers is obtained.

The Rev. H. Christmas, who describes himself as suffering from a most unwarrantable charge in connexion with the management of the Ecclesiastical History Society, and as being "refused all opportunity of setting himself right with the public," asks us to publish the following explanations,—which we do, omitting a few sharp words, leaving to him all the responsibility which may attach to his statements.—

"My connexion with the Society above named was but short. I was, indeed, one of its projectors, and laboured about a year very diligently—and, I may say, successfully—to obtain patronage and support for it. I continued my connexion with it till the appointment of a person to be Secretary for general business, whose proceedings were, as was soon publicly known, characterized by * * *. I laid before the Rev. Robert Eden, one of my colleagues, my grounds of * * * [objection]. I urged him again and again to discontinue the person in question—but my repeated urgings were disregarded, and the Society continued under his management, until it was found that he had * * *. As I found that my influence was powerless for good, I left the Society,—but I did so before a single volume had been published, and while Mr. Eden and those who were acting with him were perfectly satisfied, not only of the solvency but of the propriety of the Society. My successor was a step which I took with much pain, and was accompanied by assurances to Mr. Eden, which I have since abundantly fulfilled, that, though I took so widely different a view from him of the position of the Society, I should ever feel anxious to promote its welfare. I subsequently aided Mr. Eden, by my evidence in the Court of Chancery, to relieve himself from a claim of partnership made by the * * * Secretary. I prepared for a nominal remuneration—cancels for one of the works published by the Society—the Committee not permitting me to do so gratuitously; and I collated, free of all expense to the Society, the first two volumes of their Prayer Book with the sealed copy in the Tower. I am responsible for nothing else in this work, and the third volume was not collated with the sealed books at all. For this service,—one attended with some expense and considerable labour,—the Committee offered me six copies of the small-paper edition and one of the large-paper; and I was not a little surprised to find that they deliberately refused to complete these sets (mostly given by me to public institutions) by furnishing copies of the third volume,—so that what I have received amounts to so much waste paper. Their reason for this refusal is, that they will not collate the third volume,—the fact being, that, in order to avoid this expense, it was not collated at all. I was ready and willing to do what I had done, and repeatedly wrote to Mr. Stephens to tell him so. But this, discreditable as it is, would not induce me to trouble you, had not the Society, or rather a committee formed by the Bishop of London to wind up its affairs, deliberately put forth a statement that I forsook Mr. Eden, and left him to meet, unsupported, the great liabilities of the Society. I have addressed the Rev. Alexander Taylor, the Secretary of this committee, to whom the report is attributable, but he professes not to see that I have any claim on the Society or any ground for complaint! He declines to see me, that I may explain the matter to him, and he does not comprehend a statement such as that which I now make to you.—The object of the report is, to make out a case for Mr. Eden,—

that the public may come forward to aid a subscription on his behalf, because he has, at the report avers, fulfilled his engagements with the public under such circumstances of desertion. Now, sir, I have not the least wish to hinder a subscription to Mr. Eden,—I would willingly subscribe to it myself,—but I do not wish a case (a false case, too,) to be made out for him at my expense. If it be desired to exhibit him as a victim, let it be so; but I contend that he was only the victim of his own folly and obstinacy.

I remain, &c. HENRY CHRISTMAS.

Knighthood is not ordinarily deemed compatible with the clerical character. H.R.H. the Bishop of Osnaburg in the reign of George the Third was a Knight of the Garter, but that bishopric was an amphibious dignity, neither clerical nor lay. According to our contemporary the *Daily News*, an actual clergyman, doing duty at the Dutch Reformed Church in Austin Friars, and serving also as chaplain to the Dutch Embassy, has received the honour of knighthood from his sovereign the King of Holland. The order into which the reverend gentleman (Dr. Gehle) has been initiated is, that of the Netherlands Lion.

We find in our Paris Correspondence multiplying proofs that the Government is uneasy at the free reproaches of the English press as regards the present prostration of French thought. Last week we noticed the assertion of M. Guérinotière—the literary representative of Napoleonism—that the time had arrived to carry the new system into the domain of intelligence: hence the new Government Review. This week, we find the Minister M. Rouher and Baron Charles Dupin boldly denying, on the part of the Government, and before the members of the International Congress of Statists, that liberty has been destroyed in France. Are these gentlemen beginning to feel ashamed of their position? M. Rouher especially asserted, that only "the liberty of bad passions" had been extinguished; but that real liberty existed in its most vigorous and healthy state. In reply to this assertion, we will ask one question—Is the press free to debate, to explain, to analyze M. Rouher's statement? Would such freedom be construed into "the liberty of bad passions"? Here is a fact, which throws an odd light on the vigorous and wholesome "liberty" which exists in France. When Queen Victoria went to the Hôtel de Ville, efforts were made to bring certain persons to the ball who are not found at the Tuileries, in order that the outside public might be led to infer, falsely or truly, that "the great intelligences" of France had become reconciled to the new system and the new men. These efforts failed signally. Not one of the "great intelligences" accepted the overtures made. On the morrow of the ball the Government organs announced a brilliant assemblage of literary and scientific persons at the Hôtel de Ville: and gave the name of one, M. Villemain, as a sample of the company. But M. Villemain, we are assured, was not present. He, more than any one, it is said, was surprised at the statement in the *Constitutionnel*. He wrote to divest himself of these honours: and we will ask M. Rouher how it was that, under this lauded system of "vigorous and wholesome liberty" no paper in Paris was allowed to insert M. Villemain's correction?

THE EXHIBITION OF THE PHOTOGRAPHIC PICTURES, by ROGER FENTON, Esq., of the SEAT OF WAR in the CRIMEA, IS NOW OPEN, at the Gallery of the Water-Colour Society, Pall Mall East, from 10 to 6 daily.—Admission, 1s.

ROYAL GALLERY OF ILLUSTRATION, 14, Regent Street.—The Great Excitement existing on the SUBJECT OF THE WAR has induced the Proprietors to prepare their forthcoming Illustrations WITHOUT CLOSING THE DIORAMA. THE EVENTS OF THE WAR will therefore continue to be exhibited daily, at Three and Eight o'clock. Admission, 1s. 2s. and 3s.

SEVASTOPOL.—GREAT GLOBE, Leicester Square.—The Attack of the Allies on the Malakoff and Redan are placed upon the Model of Sevastopol, including Inkerman, Balaklava, and Tchernaya, at the Great Globe, Leicester Square. Also, large Models of the Baltic Sea, Cronstadt, and Sveaborg. Lectures every half-hour.—Admission to the whole building 1s.; children and schools half-price. Open from 10 A.M. to 10 P.M.

THE LION-SLAYER AT HOME.—232, Piccadilly.—Mr. GORDON CUMMING describes EVERY NIGHT, at Eight, what he saw and did in South Africa. Morning Entertainments every Saturday at Three o'clock.—Admission, 1s. 2s. and 3s. The Collection on view during the day, from 11 till 6, 1s.

ROYAL POLYTECHNIC.—LECTURE on the LARGE BAR OF ALUMINIUM, presented by the Emperor of the French, daily, at 3.30 and 8.30. THAMES WATER in the MICROSCOPE, daily at 4 and 9. MR. PEPPE'S LECTURE on POTTERY, with Practical Illustrations, on Thursday at 8. FARRER'S THERIAC SHILL and RUSSIAN INFERNAL MACHINES, daily, 3.45 and 8.45. Wonderful DIORAMA DISOLVING VIEWS OF THE CRIMEAN BATTLES, daily at 2, 4, 6, 8, and 10. Tuesday and Thursday at 7.30. LAST TWO WEEKS OF SAM SLICK'S DIORAMA.

LYCEUM THEATRE.—ALL THE FASHION LEFT IN LONDON is to be found nightly within the Lyceum—the most thorough, most successful, and most popular House in the Metropolis. PROFESSOR ANDERSON, THE GREAT WIZARD OF THE NORTH, every Evening, in his new Disenchanting Magic, or MAGIC and MYSTERY, in Twelve Acts, with change of incidents every Evening. Magic and Mystery is, in one and the same place, an Entertainment, a Drama, a Farce, and a Magnificent Spectacle. The Illustrations of SPIRIT-RAPING are the most exciting and mysterious performances ever given within the walls of a Theatre.—Doors open each Evening at half-past Seven; commence at Eight. Private Boxes, 11, 12, 13, and 14; to be obtained at the Box-office, or at the principal Libraries; Stalls, 4s.; Dress Circle, 3s.; Upper Boxes, 2s.; Pit, 1s.; Gallery, 6d. The Office is open daily from 11 till 5, under the direction of Mr. Chatterton, Jun.

Grand Fashionable Morning Performance on Saturday, September 22nd, at Two o'clock; doors open at half-past One.

FINE ARTS

Grandville. By Charles Blanc; with Portrait and Autograph. Paris, Audouin.

No history of Whimsical Art in the present century will be complete unless due space be given to Grandville as a special master of that style;—nor will any chronicle be just unless the French designer's name is accompanied by such testimonials as belong to artists of the first class. There is more in Grandville's whimsies than mere exaggeration and caricature; the best part of them display, also, that propriety of taste, poetry of fancy, consistent inconsistency, that satirical sense and those occasional touches of feeling which mark the humourist. And the humourist cannot exist without he commands genius of a higher order than is implied in the power of combining absurdities. Thus, M. Charles Blanc merits thanks for this tiny memorial of one who runs some risk of being forgotten, owing to the form and inequality of his works.

The artist's name was really Gérard—Grandville having been merely a theatrical name, assumed by his grandfather,—an actor who for many years "delighted the court of Stanislas and the townsfolk of Nancy,"—and who brought up and adopted the more celebrated "*Fleury-fleur*" of the *Théâtre Français*. Our Grandville's father was a miniature-painter; and the boy, who was born in the year 1803, was destined to follow his father's branch of Art. Jean Ignace Isidore had the stuff in him of which an artist is made,—but not an artist-flatterer, which a miniature-painter must of necessity be. While the father was "painting the lily,"—in other words, making the best of his sitters,—the son was perpetuating their characteristic traits so rigorously as to get the reputation of a caricaturist. His sketches attracted the attention of Mansion, a miniature-painter of some celebrity, while he was passing through Nancy,—who recommended Gérard to send the youth to Paris. The recommendation was adopted; the boy was despatched to the French capital, with one hundred crowns and a letter of recommendation to the prompter of the *Opéra Comique*,—and made his *début* by designing a quaint pack of cards, which designs Mansion corrected, fathered, and gave to the world, under the title of the '*Sibylle des Salons*.' Some attempt was made to give him a regular artist's education, by placing him as a pupil in oil-painting under M. Hippolyte Lecomte; but Grandville seems to have been discouraged and paralyzed by the necessities of Academic study. After a brief essay at oil-painting, he threw it up in discouragement,—and made sketches of theatrical costumes for the use of provincial managers, in order to live. From this necessity he was rescued by the sudden dissemination of lithography,—a branch of art which, as M. Blanc observes, might have been expressly created for the use and comfort of fluent designers. For a time, the publications of Grandville, such as the '*Citizen's Sundays*,' were merely matter-of-fact delineations of the uncouth or absurd folk whom he met in the streets or watched in the *cafés*. But with no mere literal transcript can the real humourist satisfy himself, after a certain period. The finest powers of observation cannot exist without the observer possesses within him a quickening element of fantasy,—and when the possession of this has once been recognized by its owner, its spreadings and sportings are thenceforward no longer matters of choice so much as of impulse. Whimsies such as Grandville's cannot be arrived at: they must find out the artist. The crooked branch of

some weather-twisted thorn-tree,—the harsh profile of some stone tottling over from the top of its crag,—the dormer-window in some cottage roof, peeping out beneath its eyebrow and cap of thatch, say nothing to the common work-a-day student of the picturesque;—but they arrest a man like Hood, when he "takes his walks abroad,"—and whereas he may have gone forth full of the misfortunes of some tragic hero, he may come back with no being more serious in his mind than a *Lisamahago* or a *Dominic Sampson*.

Thus, it was only in the natural progress of events that, after trying a few among the familiar forms and types of satirical art, Grandville should one day hit upon those absurd resemblances betwixt brute and human nature, betwixt objects animate and inanimate, which exist for the fantastic artist. His '*Métamorphoses du Jour*,'—among the earlier plates of which figured an audacious presentment of an adventure in which the young Duc de Chartres was said to have taken part,—made him at once famous and formidable. This was in 1829,—and, proceeds M. Blanc,—

"It is said that La Duchesse de Berri had a malicious pleasure in forgetting to remove from her table, on one of her reception-days, certain proofs of this '*Métamorphose*,' which were found charming by all disposed to criticize the elder branch of the family. From that time forward the '*Métamorphoses*' of Grandville became the subject of every conversation." * Two authors, MM. Paul Lacroix and Ozanneux, improvised for the *Odéon* Theatre a piece, the thought and title of which were furnished by Grandville's work. The characters had to wear false heads, and the authors were asked who was to paint the pasteboard masks. Naturally, Grandville was the answer. "But where is the man who has become so famous since yesterday?" After searching for him everywhere, he was found at No. 10, *Rue des Petits Augustins*, in a little unheated room.—"You are doubtless a frequenter of the *Jardin des Plantes*," said the bibliophile to the artist.—"Sir," modestly replied Grandville, "I have only seen the animals in Buffon. It is there I study them" (and he showed a little English edition of the Natural History). "From that work I started."

The above, if correct, is curious enough; yet it seems hardly credible that one so well versed in all the turnings and windings of animal attitude and appetite as Grandville was should have gathered his experience by studying a pictured type, instead of watching pen and den, where real Bear, or Fox, or Porcupine might be seen in other moods than one. Be the matter as it may, however, '*Les Métamorphoses*' made the fortune of Grandville, and were the first of that long line of Parisian political caricatures which, betwixt 1830 and the Fieschi outbreak, gave such pleasure to the sarcastic people of the *salons*, who were ready to laugh at the pear-shaped head of the Citizen King they had chosen,—and, by every other mockery which partisanship and cynicism could devise, to sap the throne they had erected. When the spirit of caricature began to languish under constraint, Grandville took up book illustration, which about the same period began to flourish in Paris. The '*Gil Blas*,' by Gigoux, the '*Molière*,' by the Johannots—both splendid and successful works—paved the way for new editions of Béranger, in which his pencil was called upon,—and for that work by which, perhaps, he is best known in England, the *boudoir* edition of Lafontaine's Fables. M. Blanc hardly does justice, we think, to this series of designs,—the whim, frolic, and *finesse* of which give them a first rank among illustrations of the kind. Comedy and character have rarely been more adroitly united than in such groups of two as the Grasshopper and the Ant, or the absurd walking-match of Earthen Pipkin and Iron Pot. M. Blanc assures us that, ready as Grandville's pencil seems to have been, he was careful and fastidious in self-criticism as a matter of conscientious habit, doing his best in whatever he did, and often severely vexed by the arrogance and slovenliness of those who stood betwixt him and the public, when his designs were reproduced by engravers.

As Grandville advanced in life his fantasy became more and more wild, more and more playful. He had married a lady from his native place, and for some years had enjoyed the happiness of a modest home and an affectionate family circle—well qualified, says his biographer, to appreciate both. But two of his children died—his wife died too. On her death-bed she recommended the artist to console himself by a second marriage: Grand-

ville adopted this recommendation. The blow, however, had been struck. Perhaps the perpetual exercise of grotesque invention on the part of one with whom every work is a matter of conscience cannot be carried on without perilous wear and tear,—possibly the devastation of his home fell upon one imperfectly endowed with fortitude.—

The only child [says M. Blanc] left him by his first wife—the one in whom all his old affection was represented and concentrated—the little George, died suddenly, as his brothers had done. "I never saw a child with a more charming and expressive countenance," says M. Clogemont,—"I have him before me now, with his blue eyes and fair hair, and his arms round the neck of the poor artist. Father and son used to talk in a low voice,—a look from one to the other was sufficient." In little more than a month after the death of his boy Grandville began to sicken. He sketched twelve studies of "Animated Stars," in which he fancied the stars, under the forms of young females, gleaming on the firmament with human beings subject to their influence grouped beneath them. His imagination began to lose itself in delirium. He began to think that he could discover the logic of his dreams, and trace harmony and connexion even in nightmare visitations. He attempted in his '*Picturesque Magazine*' to show the paternity of ideas the most utterly senseless and monstrous,—to seize the thread of reason in the labyrinth of sleep. On being attacked by a slight complaint of the throat, which made neither his family nor his physician uneasy, he declared in a strong voice that his death was at hand. Showing his "animated stars" to his nearest friend, M. Giraud, he said, "Believe me, I feel that I am going to study my stars nearer at hand." Some days before he died he had M. Charton summoned,—those to be alive with him, and astonished him by his mysterious grandeur of his presentiments. Lawyers aside his habitual gallantry and the language of his *salon*, he opened his mind, spoke seriously of a future life, and called on his guest to talk about faith in man's immortality. * * M. Charton passed many hours with the invalid, though far from believing him to be in danger. The day after Grandville became raving mad. It was necessary to place him in the care of Dr. Vauvray, of Voves, who died eight hours afterwards on the 17th of March, 1847, aged forty-four years.

We think that the above notices, gathered from a tiny *one-franc* volume, will satisfy many readers that a life of Grandville written with reference to his epoch, to his own branch of art, to the events of the time which he chronicled after his fashion, and to the issue of his imaginations as working on a spirit tender and sensitive, might be a welcome addition to our French literature. Now that philosophy and political argument are silenced in France, is not good service to be done by French men of letters in the domains of biography undertaken in a genial spirit and executed with a careful hand? We think so; remembering certain books which have come under notice lately,—such, for instance, as the work on Leopold Robert by M. Delécluze, and the sketch before us, which makes us anxious to know more of its subject.

FINE-ART GOSSIP.—We have received some precise information on the subject of the Monument to the late Duke of Wellington, adverted to last week, in consequence of a statement which appeared in the *Daily News*. Our informant, who has unquestionable knowledge of the facts, says, "There is no truth whatever in the statement contained in the *Daily News*, and copied into the *Athenæum* last week, to the effect that the Chief Commissioner of Public Works has engaged Baron Marochetti to execute the monument to the late Duke of Wellington, to be erected when complete in St. Paul's Cathedral." This statement justifies the doubt which we expressed as to the accuracy of the statement copied from our contemporary last week, as well as our caution in not prematurely blaming the Board of Works for doing a thing which it had not done, merely on the strength of gossip in artistic studios. Our informant adds:—"It is perfectly true that Parliament voted the sum of 5,000*l.* for a monument, and that the late Chief Commissioner invited Baron Marochetti, and Messrs. Gibson, Baily, and Foley to compete. The two former declined competition. The two latter sent in models, which Sir William Molesworth rejected: and he obtained the sanction of the Treasury for the payment of 300*l.* to be paid to Messrs. Baily and Foley. This sum was paid to these gentlemen. The late Chief Commissioner declined to receive any further models or designs from them, and the present Chief Commissioner has done the same—and so the matter stands." This statement will be satisfactory—in part at least—to all readers. We do not doubt Baron Marochetti's power; indeed we have been among

the foremost to give the sculptor credit for the many striking merits of his artistic works: but we hold that he is absolutely excluded from the list of those who can claim the commission for the Wellington Monument by his own act. Professional morality would be at an end, if Ministers were to give away National works without regard to their own dignity and the interests of Art. An artist may not refuse,—and then accept. From the foregoing statement it results that the Wellington Monument is not yet given away, and the public will wait with curiosity to see what course Sir Benjamin Hall will take in the matter.

In our notice of Lady Morgan's portrait last week, we should have said that the lithograph was drawn by Mr. Lynch from a painting by M. Gambardella.

A great activity in the way of Art-Exhibition prevails on the south coast. We have already spoken of an excellent collection of pictures, statues and illuminated manuscripts at Worthing. We have now the pleasure to announce the opening of a collection of the works of modern artists at Brighton, got together and housed in the Pavilion by the care and taste of the Brighton Society of Arts. Among the pictures already contributed—about three hundred in number—are productions of Messrs. Carl Haag, Lance, Lear, G. A. Williams, J. Callow, A. Frupp, Robins, Hammersley, Hayter, West, Burgess, Bartholomew, Oakley, Mesdames Oliver, Rigaud, and other artists of repute. The Society, under the immediate patronage of the Duke of Richmond, the Bishop of Chichester, and other noblemen and gentlemen, commences a series of operations to embrace periodical Exhibitions of ancient and modern masters, the establishment of a school of design, &c., intended to promote the artistic culture of the visitors and inhabitants of the town and neighbourhood. These Exhibitions cannot fail to add to the many attractions of these favourite watering-places.

Mr. Moxon and Dr. Beattie, co-executors for Campbell's monument in Westminster Abbey, send us the following:—"The observations entitled '*Fine-Art Gossip*,' contained in your number of the 25th of August, with reference to the statue of the poet Campbell, are not warranted by the facts of the case. Letters which have passed between the Committee for the erection of the monument and Mr. Marshall are in my possession; and on my return to town the correspondence, with a statement of facts, shall be placed in your hands. This, I trust, will satisfy every reasonable person that Mr. Marshall can have no ground of complaint against the Committee and friends of the poet, who have fully performed and redeemed every engagement and assurance made or given by them to Mr. Marshall. I am, &c.

"WM. MOXON, Executor and one of the Committee."

"St. Maugham's, Sept. 17."

"In the absence of my co-executor, who is spending his vacation in the country, I beg to add that I entirely concur in the above.

"WM. BEATTIE, Executor, and Member of the Committee."

"Sept. 19."

—Our readers, as well as ourselves, are here invited to suspend judgment on the facts of the case, until everything is explained. We shall do so with pleasure. If it can be shown that Mr. Marshall is not a loser by his generous enthusiasm all parties will be pleased. Meanwhile, we await the promised evidence.

Mr. Noble's statue of the Duke of Wellington, executed for the Court of East India Proprietors, has been erected in the Court Room in Leadenhall Street.

If architecture improved in proportion to the number of new churches built, we should soon see the revival of a lost science. From 1841 to 1851 there were 1,197 churches built in Great Britain. In London alone there are 1,114 architects.

The Charity Commissioners propose to remove the pictures in Dulwich Gallery to the National Gallery—a centralization of Art, but an injury to Dulwich. A new church is to be built with the spare funds, and two open schools are to be erected.

The Directors of the British Bank having pur-

chased the old South-Sea House for 55,000*l.*, are now repairing it.

The Duke of Buccleuch is about to rebuild Montague House at a cost of 100,000*l.*

Architects speak with much pleasure of the demolition of an old house which has left a view of Wren's church of St. Michael, Cornhill.

The new proposition for the vacant space round St. Paul's is to cover Old Change with an arcade. The style to be Anglo-Italian, red brick and stone, Doric and Ionic vaulted roofs of glass, and balustrades, are talked of. This seems a miserable compromise.

We string together a few paragraphs of German Art-gossip. Prof. von Kaulbach, assisted by his pupil, Herr Echter, has almost finished his large fresco-painting, 'Die Hunnenschlacht,' in one of the saloons of the new Museum, at Berlin.—Prof. von Schwind has returned from the Wartburg to Munich, after having finished at the famous old castle his series of frescoes serving to illustrate its history.—Prof. Rauch has executed in marble a fine bust of Baron Humboldt. His marble group of Moses, with Aaron and Hur staying up his hands in the battle with the Amalekites, is advancing, and will, when completed, find its place at Sans Souci.

The Düsseldorf Exhibition of this year, opened in the latter half of July, is drawing near its close. To judge from the reports in the Rhineland papers, it is by no means equal to many of its predecessors. The great names of the school are hardly represented, and the few to be met with do not appear to have contributed works worthy of their reputation. Grand historic combinations are wanting altogether, and the landscapes are scarcely so numerous as in former years. The most attractive picture, we infer from the journals, is the work of a lady,—*'Pflanzerkinder,'* by Frau Marie Wiegmann, a gifted pupil of Prof. Sohn. It represents a group of beautiful, half-naked children, playing, with southern vivacity, among the tropical plants of a shallow river, and watched by a coloured woman who, in a cowering position, looks down on them from the shady shore. Among other pictures mentioned with praise, we observe *'Christmorgen,'* by Herr Joseph Fay,—*'Das Findelkind,'* by Herr Salentin,—*'Eine Kegelbahn,'* by Herr Hiddemann,—*'Nach der Schlacht,'* by Herr Sell,—and a north German forest-landscape, by Herr A. Michelia. *'Die Aufnahme des Papstes Sixtus V. als Hirten-Knabe in das Kloster zu Ascoli,'* by Herr Carl Thiel, one of the youngest members of the school, is reported to surprise by its masterly colouring and technical perfection. Some pictures by Prof. Julius Hübner of Dresden (formerly one of the great ornaments of the Düsseldorf Academy), are very severely blamed.

MUSIC AND THE DRAMA

SADLER'S WELLS.—The performance of *'The Tempest,'* announced for last Saturday, was deferred until Thursday. Mr. Barrett substitutes Mr. George Bennett in the part of *Caliban*:—about as good an exchange as could be made, but still leaving abundant reason to regret the absence of the original representative.—On Monday the tragedy of *'Virginius'* was revived.—Mr. Phelps supporting the character with his usual pathos. The heroine was attempted by Miss Eburne. The want of inflexion and intonation in this young lady's delivery is a great misfortune. A musical organ is half the making of an actress,—who can, indeed, scarcely prove pleasing without; especially when, as in the present case, the deficiency of tone and compass leads to a strain upon the voice, and induces a tendency to rant. *Servia* was made of more than common importance by Miss Atkinson. Mr. Marston gave to *Dentatus* a capital expression—rough, racy, and powerful; while Mr. F. Robinson, in *Idilius*, was just the Roman lover, and played not only with his usual grace but considerable force.

SURREY.—We are happy to find that this theatre resorts once more to the higher drama, and, at this season, commences the regular management in a worthy manner. The revival of *'King Henry the*

Fourth,' with correct scenery and costumes, and well acted, is calculated to improve the taste of the audience, while it amuses their leisure. Mr. Creswick's *Hotspur* is one of the parts in which this actor excels,—and the vigour and discrimination with which he plays it remain undiminished. For one thing he merits especial credit. The omission of the scene between Hotspur and Glendower, in all the reproductions of this stirring drama that we have witnessed, was at least impolitic. Other managers besides Mr. Creswick might, in this respect, advantageously imitate Mr. C. Kean, who, in *'Henry the Eighth,'* restored with excellent effect the scene between Queen Katharine and the two Cardinals:—a like restoration in *'Henry the Fourth'* of the great Glendower scene is a beneficial innovation on that stage-convention, which has so much injured and impaired the full effect of Shakespeare's more matured dramas, by exciting certain transitional scenes as unnecessary; whereas their insertion conduces to the general harmony, and provides the links by which the mind is carried from point to point through those gentle degrees which the true poet most affects; while the mere playwright depends on abrupt force and unexpected violence. We are glad that Mr. Creswick's attention has been drawn to this point.—An American comedian has been introduced here—Mr. J. H. M'Vicker, in a broad Transatlantic drama, entitled *'Sam Patch.'* It is a kind of *Sam Slick* affair, and not without the peculiar humour, quaintness, and conceit implied in the given appellation. Mr. M'Vicker is over-violent and boorish, but succeeded in eliciting immense laughter. He cannot, however, be commended on the score of taste, nor, as we should hope, on that of truth.

HAYMARKET.—The little comedy of *'The Sultan'* was revived on Monday, in order to give Miss Blanche Fane the opportunity of appearing in a new and pleasing character. The part of *Roxalana* is perhaps a little too much like that of the heroine of *'Court Favour,'*—but the appointments of the piece, including picturesque dresses and oriental furniture, are sufficiently different to vary the specific impressions, and distinguish them from those imparted by the preceding production. At any rate, the audience received the young actress in her second part with unequivocal approbation.

STANDARD.—Mrs. Wallack made her *début* at this theatre on Monday in the character of *Ion*, and won the suffrages of a very full house. The tragedy was introduced to this stage for the first time. It was therefore curious to watch how a drama so classical, abstract and severe would be received by so very miscellaneous an audience. Mrs. Wallack's melodious elocution might have had something to do with the reception that it obtained; the reception itself, nevertheless, merits to be recorded as extraordinary. It is pleasing to find that poetry, when fitly pronounced, still so readily penetrates to the popular heart, though repudiated by the frivolous and the fashionable in favour of the most trifling forms of composition and the merely clever manifestations of talent exclusively theatrical. The part of *Adrastus* was powerfully played by Mr. Johnstone,—but the other characters failed to find adequate representatives.

PRINCESS'S.—This theatre closed on Friday week with the hundredth performance of the spectacle of *'Henry the Eighth.'* This, of course, is claimed as a triumph by the management, and we are not disposed to dispute the assumption. If, however, it be stretched to include the poet Shakespeare, we are compelled to demur. It does not even extend to the acting of the play, which, though respectable, is far from being entirely satisfactory. The judgment of private playgoers is less favourable to the performers than that of the public press. The critic made concessions on account of the managerial expenditure and the general good character of the company, which, as a working one, has many points of excellence. But the impartial *habitué* of theatres regards the fitness of the performers to the part, and the instances are not few in the cast of *'Henry the Eighth'* where this fitness was altogether absent. Now that no pecuniary loss can accrue from the statement, there

is no reason why this opinion should not receive the sanction of authority, so far as it may be true. All these nice dramatic considerations, however, were over-ridden by the splendour of the stage appointments, and the sacrifice was accepted for the sake of the magnificent *mise en scène*. As a spectacle, then, and that exclusively, can we be called upon to regard the success achieved. Let the right thing be put in the right place, and we acknowledge whatever merit may belong to its production.

MUSICAL AND DRAMATIC GOSSIP.—The number of wandering English Opera companies in England seems to increase in proportion as the number of competent English singers seems to diminish. Two parties—one headed by Madame Thillon, the other by Mlle. Nau, are now making the circuit of our provinces.—The Italian companies, which circulate for a few weeks after the London season is over, and before Paris and St. Petersburg open their opera doors, seem to have been "doing well" this war-autumn. Some of them are now sufficiently complete to give even Meyerbeer's grand operas—*'Le Prophète'* having been the other evening performed in Dublin with great success.

When writing of the Birmingham Festival, the music there naturally took precedence of the recent decorations of the Town Hall:—which has gained much from the gay and graceful arabesques with which it has been bedecked, and from the new manner of lighting it. We are not so sure that the organ has gained in the process of metamorphosis,—its pipes, which form so august a mass at one end of the hall, having a gay and frippery look in their new coating of blue and gold,—which we think is not in true taste. To illustrate what we mean, while there can be no objection to decorating the wooden case with wood mosaic, *marqueterie*, inlaying, or whatever else "the wise it call,"—to paint a pipe which is known to be of metal with a colour which is not metallic, shocks our sense of what is fit and possible, about as much as the sight of a pink opheicleide in M. Prosper's embraces would do. Neither, if the Messrs. Distin were to perform on pea-green horns, should we like the sight, however much we like the sight of colour. But the decoration of musical instruments, and the canons according to which it ought to be regulated, is a subject for the discussion of which the right place is, possibly, another column of the *Athenæum*.

Mr. E. T. Smith, of Drury Lane, announces two new pieces,—the long-promised Egyptian drama, by Mr. Fitzball, and a new play by Mr. Robson. For the acting of these and other ventures he advertises Miss Glyn, Mr. C. Mathews, and Mr. Barry Sullivan. These are to form the leaders of the company. Some, also, of the Lyceum troupe are engaged to assist the performances of Mr. Mathews.

Miss Edith Hersaud has already commenced her provincial tour, with the new play of *'Wife, or No Wife.'* It was performed on Tuesday week at Cambridge.

Notes of preparation for the commencement of the winter musical season in Paris, by the opening of the Italian Opera there on Tuesday week, are beginning to be heard. A list of the artists engaged has appeared in the *Athenæum*. We have looked over a list of the operas, in which Signor Rossini has the lion's share. Two works by the *maestro*, as yet unperformed in Paris, are promised. Is one of these to be *'Ermione'*? Three new operas by other composers are also to be brought forward,—*'Leonora,'* by Signor Mercadante—*'Fiordina,'* by Signor Pedrotti—and *'L'Assedio di Firenze,'* expressly written for the theatre by its musical conductor, Signor Bottesini.

Le Nord, the Russian organ published at Brussels, says, in a correspondence from St. Petersburg, that the theatres of the Empire (closed during the last half-year) were to have been reopened on the 13th of September, the name-day of the Emperor. Also, that the large theatre of Moscow (burnt down in 1853, and now, after its restoration, said to be the largest in Europe) is among the number.

M. Léon Gozlan has produced a new five-act comedy at the *Théâtre Français*, entitled, 'Le Gâteau des Reines.' By way of summing up, M. Janin writes—"This comedy is an agreeable one,—curious, intelligent, well-made, with much grace and esprit." The acting of Mlle. Brohan as *Madame de Prie*, is also commended by the critic.

The arrival of Mlle. Rachel in America, and her first appearance at New York in presence of an audience rather select and enthusiastic than crowded, are announced by the American papers just at hand.

A new musical engine of torment has been just found out in America. The following is from a late number of *The New York Musical Gazette* :—

A Yankee genius has succeeded in harnessing steam to a musical instrument, which will out-sax Mr. Sax's noisy inventions most decidedly. His name is Joshua C. Stoddard, of Worcester, Mass., and the following (from an exchange) description will give some idea of the invention :—"The instrument is of simple construction, and when once thoroughly put together, will seldom if ever get out of repair. It consists of a horizontal steam-chest or cylinder, some six feet in length, and from four to six feet in diameter, which is fed with steam from the large boiler in the establishment where it is located. Upon the top of this cylinder is a series of valve-chambers, placed at equal distances from each other, into which the steam is admitted without obstruction. Each valve-chamber contains a double metallic valve, with no packing, yet it fits so closely upon its seat as to admit no steam to escape. To each of these valves is connected a very small piston-rod, which passes through the chamber, and is operated upon by means of a ratchet. Were it not for this stem, the valve would be simply a double balance-valve, and would remain stationary wherever placed, the pressure of steam being equal on all sides; but a part of one end of the valve being carried outside of the chamber, gives it the self-closing power, which is the nicest part of the whole invention, and perhaps the best patentable feature. With a slight pressure against these rods, the valve is opened; and when the pressure is removed, it closes as quick as steam can act, which is not much behind electricity. Directly over each of these valves is placed a common alarm whistle, constructed similar to those used upon locomotives, except that it admits of being raised or lowered, to flatten or sharpen the tone. These whistles are made of different sizes, so as to produce the desired tone corresponding with each note, &c. This completes the machine, with the exception of a cylinder similar to those used in a common hand-organ or music-box, containing cogs which, when properly arranged, will, when turned by hand or otherwise, operate upon the valves in such a manner as to play any tune desired by simply changing the position of the cogs, which are intended to be movable. One of these instruments can be heard from ten to twenty-five miles on the water, and every note will be perfect and full. We heard the inventor play 'Rosalie' on it, and it looked like 'getting off tall notes' mechanically. This invention is so completely under the control of the operator, that, were it arranged with a key-board similar to a piano, it would obey the slightest touch, and a child could play slow or quick tunes, every note of which might be heard several miles. It is the design of the inventor to place these instruments upon locomotives and steam-boats. It would appear rather novel to John Bull to hear 'Yankee Doodle' from one of our ocean-steamers as she was about to enter a British port, (say twenty miles,) and it would remind a Yankee of his jack-knife to hear 'Sweet Home' from the same or equal on its return to New York or Boston. This invention, if it meets the expectations of most who have seen it, will alter the tone of public demonstration on important occasions very essentially."

—It seemed difficult to add another aggravation to the pains and penalties of a voyage ;—yet here it is done, supposing Mr. Joshua C. Stoddard to prove a real person. Fancy an organ made up of steam whistles, having a twenty-mile screech,—for the delectation of worn and languid folk, after some days of rough weather, yearning for nothing so much as a cessation of the tossing, jarring, heaving motion ;—and as the silence of

A sleep, for sleep itself to rest in !

—We have rarely heard of a discovery so richly calculated to excruciate all who come within its sphere.

TWENTY-FIFTH MEETING OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The Glasgow Meeting of the British Association has come to an end—with its public breakfasts, excursions, dinners, sectional labours, lectures, and evening assemblies for talk and recreation. A *conversazione* was held in the M'Lellan Rooms on Thursday night.—Friday evening was devoted to a lecture by Dr. CARPENTER 'On the Characters of Species.' He defined species to be groups of individuals which either have, or may have had, the same common ancestry ; and showed how specific distinctions are formed by the study of a number of individuals maintaining certain invariable characters. The discourse was illustrated by a beautiful series of drawings of the lower tribes of animals,

beginning with those on the border of the vegetable kingdom.—On Saturday a trip had been arranged to Loch Lomond and Loch Fine, for the special benefit of the Naturalists and Geographers, and the door of the refreshment-room of the steamer was labelled Section G—which was understood to mean Section Gastronomique. The weather was bad, and the excursionists were few. In the evening a second *conversazione* was held in the M'Lellan Rooms.—On Monday morning a meeting was held to fix upon the next place of meeting, the DUKE OF ARGYLL in the chair. Deputations were present from Cheltenham and Brighton ; and documents were read soliciting the honour of receiving the Association next year at Manchester, Leeds, and Dublin. A lengthened conversation ensued between the Cheltenham and Brighton deputations on the claims which each possessed on the Association holding its meeting in their cities. Eventually a division took place, which resulted in favour of Cheltenham, by a small majority. The following office-bearers were then elected for the ensuing year :—*President*, G. R. Daubeny, M.D. ; *Vice-Presidents*, The Earl of Ducie, The Bishop of Gloucester, Sir Roderick I. Murchison, B. Baker, Esq., The Rev. F. Close ; *Secretaries*, Capt. Robertson, R.A., R. Beamish, Esq., W. Hugall, Esq. ; *Treasurers*, J. Webster, Esq., J. A. Gardner, Esq.—On the evening of the same day, Col. RAWLINSON delivered a discourse 'On the Cuneiform Inscriptions of Assyria and Babylonia.'—Col. Rawlinson began by saying he feared the vastness, as well as to a great extent the novelty, of the subject would prevent him doing it anything like justice in the very limited time he had at his disposal. The excavations which had been carried on in Assyria and Babylonia had been continued through six or seven years—they had ranged over tracts of country 1,000 miles in extent—the marbles excavated would be sufficient to load three or four ships, and the historical information contained in them would exceed ten thousand volumes in clay. Of course, in dealing with such a subject he could only select a portion of it,—and even of that he could only communicate the heads. The part to which he wished to direct their attention was the Cuneiform Inscriptions. This phrase merely signified the wedged-shaped form of writing, and was not employed in any particular language or by one particular nation. The cuneiform system of letters was a species of picture-writing, invented, not by the Semitic inhabitants of Babylon, but by those who preceded them. This writing was, however, reduced by the Semitic race to letters, and adapted to the articulation of their language. Their mode of writing consisted of several elements. There was the ideographic, or picture-writing, and the phonetic, which was equivalent to the alphabet of their language. He had been fortunately able to obtain among the ruins of Nineveh a tablet which actually exhibited the several developments of this system of writing into a regular alphabet. The cuneiform inscriptions were divided into three branches—Persian, Scythic, and Assyrian ;—and it was on the third of these that he wished to say a few words. He then proceeded to explain how the decipherment of these inscriptions had been obtained. About twenty years ago his attention had been directed to a series of inscriptions in cuneiform characters on a rock at Behistun, near Kermaixhab. The tablet was divided into three compartments, giving three different versions of the same inscription, and on the simplest of these, the Persian, he set to work, and found by comparing it with the two others that they corresponded, with the exception of two or three groups, from which, on further investigation, he made out—Hystaspes, Darius, and Xerxes. By means of these proper names he obtained an insight into the Persian alphabet, and by analyzing the names of the ancestors of Darius and Hystaspes, and obtaining a list of the tributary provinces of Persia, he managed to form the alphabet. This was, however, but the first step ; the great object being to decipher the Assyrian inscription, and this could only be done by comparing it with the Persian. The tablet was situated on the face of the rock, 500 feet from the ground, with a precipice above it of 1,200 feet, and, in order to reach it, it

was necessary to stand on the top rung of a ladder placed almost perpendicular. Nor was this all, for there was still the Babylonian to be copied, and it was engraved on the overhanging ledge of rock, which there was no means of reaching but by fastening tent-pegs into the rock, hanging a rope from one to the other, and, while thus swinging in mid-air, copying the inscription. An insight into the system of writing being thus obtained, the fortunate discovery of the ruins of Nineveh furnished a great mass of documents to which it might be applied. Wherever they had found tumuli, or any appearance of a ruin, trenches were sunk, galleries opened, and in almost every case they came upon the remains of inscribed tablets. Whether it was the king who wished to issue a bulletin, or a shopkeeper to make up his accounts, the same process had to be gone through of stamping it on clay tablets. The decipherment of these inscriptions led to important results in an ethnological point of view, both as indicating the race to which the writers belonged, and affording important information with reference to the habitat of races and their migrations. Among the many points which they were now enabled satisfactorily to settle, he alluded to the connexion between the Turanian and Hamitic families, and to the occupation of Western Asia by the Scythic, and not the Semitic race. He also mentioned that from the inscriptions he believed it could be shown that the Queen of Sheba came from Idumea. As to the advantages conferred on geography by these discoveries, he would not attempt to give in detail the ramifications of geographical knowledge which had been thus obtained. He would proceed to the most interesting and important branch of the subject, the historical. An erroneous impression was at one time in circulation that the information obtained from the inscriptions was adverse to Scripture. But so much was it the reverse of this, that if they were to draw up a scheme of chronology from the inscriptions, without having seen the statements of the Scriptures, they would find it coincide on every important point. The excavations at Chaldea furnished them with inscriptions showing the names of the kings, their parentage, the gods they worshipped, the temples they built, the cities they founded, and many other particulars of their reign. He then mentioned some circumstances with reference to the mound at Birs-Nimrod, which he had recently uncovered, and which he found laid out in the form of seven terraces. These were arranged in the order in which the Chaldeans or Sabeans supposed the planetary spheres were arranged, and each terrace being painted in different colours, in order to represent its respective planet. Another curious circumstance with reference to this excavation was the discovery of the documents enclosed in this temple. From the appearance of the place, he was enabled at once to say in what part they were placed, and on opening the wall at the place he indicated, his workmen found two fine cylinders. He also mentioned another small ivory cylinder which he had discovered, and round which were engraved mathematical figures, so small that they could hardly be seen with the naked eye, and which could not have been engraved without the aid of a very strong lens. In concluding, he said that before the British Association met next year, he hoped to be able to bring before them the decipherment of several highly important inscriptions.

THURSDAY.

SECTION A.—MATHEMATICAL AND PHYSICAL SCIENCE.

President—Rev. Prof. KELLAND.
Vice-Presidents—Rev. Dr. ROBINSON, Sir D. BREWSTER, Rev. Dr. WHEWELL, Prof. STOKES, Rev. Dr. SCORSEBY, M. J. JOHNSON.
Secretaries—Dr. STEVELL, Rev. Dr. FORBES, Prof. TYNDALL, Prof. D. GRAY.
Committee—Admiral Beecher, Sir D. Brewster, Capt. Sir E. Belcher, M. Mahmoud, Prof. Phillips, Col. Portlock, Col. Sabine, Prof. Nichol, R. Greene, C. Babage, Prof. W. Thomson, Prof. C. P. Smyth, Admiral Sir J. Ross, E. J. Love, R. Russell, Isaac Fletcher, R. Grant, J. Lee, A. Claudet, Capt. Jacob, Col. Sykes, Lieut.-Col. James, Rev. Prof. Chevallier, Sir W. R. Hamilton.

'Report on Luminous Meteors,' by Prof. POWELL, was introduced by the Secretary.—Though less voluminous than usual, it contained an account of some meteors of considerable interest. One of the most extraordinary was described by Prof. Bond, its discoverer being Miss Jenny Lind.

'An Account of some Experiments with a large Electro-Magnet,' by Mr. JOULE.—Prof. W. Thomson, in Mr. Joule's absence, brought the subject before the Section.—The relation of the exciting force to the sustaining power of a magnet was the subject which it was the author's desire to examine, the laws arrived at being very divergent from those usually received. The soft iron made use of in this magnet was of such a nature that it always—probably on account of intense magnetization on some former occasion—retained a residual polarity which was always in the same direction. The magnet might be excited by a current which developed a polarity opposed to the residual one; but, on the interruption of the current, the latter re-appeared. With high power, the lifting power fell short of being proportional to the square of the current; but with feeble excitation, Mr. Joule found the sustaining force to vary as the fourth or fifth power of the current strength employed.

Dr. ROBINSON gave an account of some of his own experiments on this subject, which confirmed those of Mr. Joule. The magnet made use of in his experiments consisted of two upright pillars of soft iron, with a moveable crosspiece of the same metal, which enabled him to vary the length of the limbs of the magnet. To determine the lifting power, a keeper, or sub-magnet, accurately planed, was placed across from pole to pole of the magnet, and, by a suitable mechanical arrangement, the force necessary to separate it from the excited magnet was determined. An approach to the point of magnetic saturation soon manifested itself, and, in this respect, the experiments of Prof. Robinson were quite confirmatory of those of Mr. Joule.—Prof. TYNDALL remarked that he had sometimes been surprised to observe the comparatively low power of excitation in Mr. Joule's experiments at which the approach to magnetic saturation was exhibited. In Müller's experiments, where thick bars of iron were used, it required very strong excitation to produce the falling off, from the law that the magnetic attraction is proportional to the square of the exciting current. In Mr. Joule's experiments masses of soft iron were made use of, of far greater size than those used by Müller, but nevertheless the falling off from the law alluded to soon exhibited itself. In the remarks which had been brought before the Section, the shape of the magnet was omitted as an element in the question; but in all probability, it would be found that if one of the limbs of Dr. Robinson's magnet were employed alone as a straight bar, its magnetism being measured by its action upon a freely suspended magnetic needle, instead of by its lifting power, the magnetic saturation of the bar would be much more difficult of attainment. Or even preserving the form of experiment made use of by Dr. Robinson, and introducing a plate of non-magnetic matter one-tenth or one-hundredth of an inch in thickness between the keeper and the magnet, a totally different law of lifting power would be obtained; the magnetic attraction in the last case would preserve its proportionality with the square of the current for a much longer period. A current which would appear to saturate the magnet in Dr. Robinson's experiments would not saturate it in the latter case; and there does not appear to be any sufficient reason for accepting the latter result in preference to the former as expressive of the absolute capacity of the magnet for magnetization.—Dr. ROBINSON observed in reply, that he believed his method of experiment preferable to that suggested by Prof. Tyndall for the special object in view. He regarded the disruption of direct contact better calculated to throw light on the true state of the magnet than the separation of the keeper where an interval existed between it and the magnet. He had actually introduced such an interval as that spoken of by Prof. Tyndall, and it was true that he had found a totally different law from that arrived at when magnet and sub-magnet were in contact.

'On the Radiant Spectrum,' by Sir DAVID BREWSTER.—The author communicated some remarkable experiments on what he termed the radiant spectrum.

'Account of Experiments on the Force of Electro-Magnets,' by Mr. J. P. JOULE.

'On the Effect of Mechanical Strain on the

Thermo-electric Qualities of Metals,' by Prof. THOMSON.

'On Peristaltic Induction of Electric Currents in Submarine Telegraph Wires,' by Prof. THOMSON.—Recent examinations of the propagation of electricity through wires in subaqueous and subterranean telegraphic cables, have led to the observation of phenomena of induced electric currents, which are essentially different from the phenomena (discovered by Faraday many years ago) of what has hitherto been called electro-dynamic, or electro-magnetic induction, but which, for the future, it will be convenient to designate exclusively by the term electro-magnetic. The new phenomena present a very perfect analogy with the mutual influences of a number of elastic tubes bound together laterally throughout their lengths, and surrounded and filled with a liquid which is forced through one or more of them, while the others are left with their ends open or closed. The hydrostatic pressure applied to force the liquid through any of the tubes will cause them to swell, and to press against the others, which will thus, by peristaltic action, compel the liquid contained in them to move in different parts of them in one direction or the other. A long solid cylinder of India-rubber, bored symmetrically in four, six, or more circular passages parallel to its length, will correspond to an ordinary telegraphic cable containing the same number of copper wires, separated from one another only by gutta percha; and the hydraulic motion will follow rigorously the same laws as the electrical conduction, and will be expressed by identical language in mathematics, provided the lateral dimensions of the bores are so small, in comparison with their lengths, or the viscosity of the fluid so great, that the motions are not sensibly affected by inertia, and are consequently dependent altogether on hydrostatic pressure and fluid friction. Hence the author considers himself justified in calling the kind of electric action now alluded to, *peristaltic induction*, to distinguish it from the electro-magnetic kind of electro-dynamic induction. The mathematical treatment of the problem of mutual peristaltic induction is contained in the paper brought before the Section; but the author confined himself in the meeting to mentioning some of the results. Among others, he mentioned, as being of practical importance, that the experiments which have been made on the transmission of currents backwards and forwards by the different wires of a multiple cable, do not indicate correctly the degree of retardation that is to be expected when signals are to be transmitted through the same amount of wire laid out in a cable of the full length. It follows, that expectations as to the working of a submarine telegraph between Britain and America, founded on such experiments, may prove fallacious; and to avoid the chance of prodigious losses in such an undertaking, the author suggested that the working of the Varna and Balaklava wire should be examined. He remarked that a part of the theory communicated by himself to the Royal Society last May, and published in the Proceedings, shows that a wire of six times the length of the Varna and Balaklava wire, if of the same lateral dimensions, would give thirty-six times the retardation, and thirty-six times the slowness of action. If the distinctness of utterance and rapidity of action practicable with the Varna and Balaklava wire are only such as to be not inconvenient, it would be necessary to have a wire of six times the diameter; or better, thirty-six wires of the same dimensions; or a larger number of still smaller wires twisted together, under a gutta percha covering, to give tolerably convenient action by a submarine cable of six times the length. The theory shows how, from careful observations on such a wire as that between Varna and Balaklava, an exact estimate of the lateral dimensions required for greater distances, or sufficient for smaller distances, may be made. Immense economy may be practised in attending to these indications of theory in all submarine cables constructed in future for short distances; and the non-failure of great undertakings can alone be insured by using them in a preliminary estimate.

'Elucidations by Facts and Experiments of the

Magnetism of Iron Ships and its Changes,' by the Rev. Dr. SCORESBY.

FRIDAY.

'Experimental Observations on an Electric Cable,' by Mr. WILDMAN WHITEHOUSE.—After referring to the rapid progress in submarine telegraphy which the last four years have witnessed, Mr. Whitehouse said that he regarded it as an established fact that the nautical and engineering difficulties which at first existed had been already overcome, and that the experience gained in submerging the shorter lengths had enabled the projectors to provide for all contingencies affecting the greater. The author then drew the attention of the Section to a series of experimental observations which he had recently made upon the Mediterranean and Newfoundland cables, before they sailed for their respective destinations. These cables contained an aggregate of 1,125 miles of insulated electric wire,—and the experiments were conducted chiefly with reference to the problem of the practicability of establishing electric communications with India, Australia, and America. The results of all the experiments were recorded by a steel style upon electro-chemical paper by the action of the current itself, while the paper was at the same time divided into seconds and fractional parts of a second, by the use of a pendulum. This mode of operating admits of great delicacy in the determination of the results, as the seconds can afterwards be divided into hundredths by the use of a "vernier," and the result read off with the same facility as a barometric observation. Enlarged fac-similes of the electric autographs, as the author calls them, were exhibited as diagrams, and the actual slips of electro-chemical paper were laid upon the table. The well-known effects of induction upon the current were accurately displayed; and contrasted with these were other autographs showing the effect of forcibly discharging the wire by giving it an adequate charge of the opposite electricity in the mode proposed by the author. No less than eight currents—four positive and four negative—were in this way transmitted in a single second of time through the same length of wire (1,125 miles) through which a single current required a second and a half to discharge itself *spontaneously* upon the paper. Having stated the precautions adopted to guard against error in the observations, the details of the experiments were then concisely given, including those for "velocity," which showed a much higher rate attainable by the magneto-electric than by the voltaic current. The author then recapitulated the facts, to which he specially invited attention:—First, the mode of testing velocity by the use of a voltaic current divided into two parts (a split current), one of which shall pass through a graduated resistance tube of distilled water, and a few feet only of wire, while the other part shall be sent through the long circuit, both being made to record themselves by adjacent styles upon the same slip of electro-chemical paper. Second, the use of magneto-electric "twin-currents," synchronous in their origin, but wholly distinct in their metallic circuits, for the same purpose, whether they be made to record themselves direct upon the paper, or to actuate relays or receiving instruments which shall give contacts for a local printing battery. Third, the effects of induction, retardation of the current, and charging of the wire, as shown autographically; and contrasted with this—fourth, the rapid and forcible discharging of the wire by the use of an opposite current; and hence—fifth, the use of this as a means of maintaining, or restoring at pleasure, the electric equilibrium of the wire. Sixth, absolute neutralization of currents by too rapid reversal. Seventh, comparison of working speed attainable in a given length of wire by the use of repetitions of similar voltaic currents as contrasted with alternating magneto-electric currents, and which, at the lowest estimate, seemed to be seven or eight to one in favour of the latter. Eighth, proof of the co-existence of several waves of electric force of opposite character in a wire of given length, of which each respectively will arrive at its destination without interference. Ninth, the velocity, or rather amount of retardation, greatly influenced by the energy of the current employed, other conditions remaining the same. Tenth, no

adequate advantages obtained in a 300-mile length by doubling or trebling the mass of conducting metals. The author, in conclusion, stated his conviction that it appeared from these experiments, as well as from trials which he had made with an instrument of the simplest form, actuated by magneto-electric currents, that the working speed attainable in a submarine wire of 1,125 miles was ample for commercial success. And may we not, he added, fairly conclude also that India, Australia, and America, are accessible by telegraph without the use of wires larger than those commonly employed in submarine cables?

'Note on Solar Refraction,' by Prof. PIAZZI SMYTH.—Amongst other interesting and important consequences of the dynamical theory of heat, Prof. W. Thomson having deduced the necessity of a resisting medium, the condensation of this about the sun, and a consequent refraction of the stars seen in that neighbourhood, Prof. Piazz Smyth had endeavoured to ascertain by direct astronomical observation whether any such effect was sensible to our best instruments. Owing to atmospheric obstructions, only three observations, yielding two results, had been yet obtained; but both these indicated a sensible amount of solar refraction. Should this effect be confirmed by more numerous observations, it must have important bearings on every branch of astronomy; and as the atmosphere at all ordinary observatories presents almost insuperable obstacles, the author pointed out the advantage of stationing a telescope for this purpose on the summit of a high mountain.

'Remarks on the Chronology of the Formations of the Moon,' by Prof. NICHOL.—Prof. Nichol stated that, through the munificence of the Marquis of Breadalbane, he had been enabled to bring to bear on the delicate inquiries, whose commencement he intended to explain, a very great if not a fully adequate amount of telescopic power. A speculum of twenty-one inches, originally made by the late Mr. Ramage with the impracticable focal length of *fifty-five feet*, had, at the expense of that noble Lord, been re-ground, polished, mounted as an equatorial, and placed in the Glasgow Observatory, in its best state only about six weeks ago. Prof. Nichol showed some lunar photographs, which indicated the great light with which the telescope endowed its focal images, and entered on other details as to its definition. The object of the present paper is the reverse of speculative. It aims to recall from mere speculation, to the road towards positive inquiry, all observers of the lunar surface. To our satellite hitherto those very ideas have been applied, which confused the whole early epochs of our terrestrial geology, the notion, viz., that its surface is a *chaos*, the result of primary, sudden, short-lived and lawless convulsion. We do not now connect the conception of irregularity with the history of the earth—it is the triumph of science to have analyzed that apparent chaos, and discerned order through it all. The mode by which this has been accomplished, it is well known, has been the arrangement of our terrene mountains according to their relation to time: their relative ages determined, the course of our world seemed smooth and harmonious, like the advance of any other great organization. Ought we not then to attempt to apply a similar mode of classification to the formations in the moon,—hoping to discern there also a course of development, and no confusion of manifestation of irregular convulsion? Prof. Nichol then attempted to point out that there appeared a practical and positive mode by which such classification might be effected. It could not, in so far as he yet had discerned, be accomplished by tracing, as we had done on earth, relations between lunar upheavals and stratified rocks; but another principle was quite as decisive in the information it gave, viz. the intersection of dislocations. There are clear marks of dislocation in the moon—nay, the surface of our satellite is overspread with them. These are the rays of light, or rather bright rays, that flow from almost all the great craters as their centres, and are also found where craters do not at present appear. Whatever the substance of this highly reflecting matter, it is evidently no superficial layer or stream, like lava, but extends downwards a con-

siderable depth into the body of the moon. In short, we have no likeness to it on earth, in the sense now spoken of, except our great trap and crystalline dykes. It seemed clear, then, that the intersection of these rays are really *intersections of dislocations*, from which we might deduce their chronology. Can the intersection, however, be sufficiently seen?—in other words, is the telescope adequate to determine which of the two intersecting lines has disturbed or cut through the other? Prof. Nichol maintained the affirmative in many cases, and by aid of diagrams, taken down from direct observation, illustrated and enforced his views.

'On the Achromatism of a Double Object-Glass,' by Prof. STOKES.—The general theory of the mode of rendering an object-glass achromatic, by combining a flint-glass with a crown-glass lens, is well known. The achromatism is never perfect, on account of the irrationality of dispersion. The defect thence arising cannot possibly be obviated except by altering the composition of the glass. It seemed worthy of consideration, whether much improvement might not be effected in this direction; but the problem which the author proposed for consideration was only the following:—Given the kinds of glass to be employed, to find what ought to be done so as to produce the best effect; in other words, to determine the ratio of the focal lengths which gives the nearest approach to perfect achromatism. Two classes of methods may be employed for this purpose. In the one, compensations are effected, by trial, on a small scale; in the other, the refractive indices of each kind of glass are determined, for certain well-defined objects in the spectrum, such, for example, as the principal fixed lines. The former has this disadvantage, that compensations on a small scale do not furnish so delicate a test as the performance of a large object-glass. The observation of refractive indices, on the other hand, admits of great precision; but it does not immediately appear what ought to be done with the refractive indices when they are obtained. After alluding to the method proposed by Fraunhofer for combining the refractive indices, which, however, as he himself remarked, did not lead to results in exact accordance with observation, the author proposed the following as the condition of nearest approach to achromatism:—that the point of the spectrum, for which the focal length of the combination is a minimum, shall be situated at the brightest part, namely, at about one-third of the interval $D E$ from the fixed line D , towards E . The refractive index of the flint glass may be regarded as a function of the refractive index of the crown glass, and may be expressed with sufficient accuracy by a series with three terms only. The three arbitrary constants may be determined by the values of three refractive indices, determined for each kind of glass. On applying the resulting formula to calculate r (the ratio of the chromatic changes of the indices of refraction) for the object-glass, for which Fraunhofer has given both the refractive indices of the component glasses and the value of r , which, as observation showed, gave the best results, and taking in succession various combinations, of three lines each, out of the seven used by Fraunhofer, the author found that, whenever the combination was judiciously chosen, the resulting value of r was the same, whatever might have been the combination, and equal to 1.980, which is precisely the value determined by Fraunhofer, from observation, as giving the best effect.

'On the Use of Observations of Terrestrial Temperature for the Investigation of Absolute Dates in Geology,' by Prof. THOMSON.

'On the Fixing of Photographs,' by Dr. ADAMSON, was read by SIR DAVID BREWSTER.

'On the Polystereopticon, a New Instrument to exhibit Stereoscopic Pictures,' by M. A. CLAUDET, who explained the advantages which the polystereopticon had over the common stereoscope now generally in use.

'On a Machine for polishing the Specula of Reflecting Telescopes,' by Dr. GREEN.—The expositor gave a lucid explanation of his machine (which could be made at a much less cost than others in use), by means of a working model.

'On a more General Theory of Analytical Geometry, including the Cartesian as a Particular Class,' by Mr. A. J. ELLIS.

THURSDAY.

SECTION B.—CHEMICAL SCIENCE.

President.—Dr. LYON PLATFAIR.
Vice-Presidents.—BARON LIEBIG, M. FÉLIX, M. PELIGOT, Prof. ANDERSON, Dr. ANDREWS, Dr. DAUBENT, Dr. GRAHAM, Dr. W. A. MILLER, Dr. R. D. THOMSON.

Secretaries.—Prof. FRANKLAND, Dr. H. E. ROSCOE.
Committee.—Dugald Campbell, Prof. Connell, W. Crum, W. De la Rue, J. B. Edwards, Dr. Gilbert, Dr. Gladstone, Dr. Hassall, T. S. Hunt, F. Jennings, Prof. Penny, J. Tennant, J. Tennent, T. Turnbull, Dr. G. Wilson, Dr. J. Pearson, Prof. F. G. Calvert, Dr. Macadam, Dr. Matthiessen, Prof. Ronalds, Dr. M'Vicar, Rev. J. Barlow, R. Allan, Dr. Baer, Dr. Hermann, J. Young, G. F. Wilson, S. Hignley, H. Bartholomew, J. Napier, J. Meddum.

Dr. LYON PLATFAIR stated, with reference to the business of the Section, that Friday would be devoted to papers on Scientific Chemistry; Saturday to papers on Metallurgy and Mineralogy; Monday to papers on Agricultural Chemistry, and questions relating to Food; and Tuesday, to papers on Manufacturing Chemistry.

'On a New Glucoside contained in the Petals of a Wallflower,' by Mr. J. GALLELEY.

'On the Action of Acids and Alkalies on Colouring Matters,' by Prof. ANDERSON.—After the reading of this paper,

BARON LIEBIG handed in for inspection a large bar of the new and interesting metal Aluminium. After some remarks from the PRESIDENT respecting the source and some of the remarkable properties of this metal, Dr. DAUBENT mentioned that he had in his possession a set of small analytical weights made from this metal, which is peculiarly adapted to this purpose owing to its great specific lightness.

Dr. PLATFAIR mentioned an interesting property of the metal aluminium—its resonance, which was evident to the whole Section.

'On the Chemical Changes undergone by Artificial Sea-Water after ten months' Use in the Marine Vivarium,' by Prof. G. WILSON.

'On the Polar Decomposition of Water by Frictional and Atmospheric Electricity,' by Prof. ANDREWS.—The author having drawn attention to the fact, that water had never been decomposed by the action of the common friction electricity, so as to collect the gases and exhibit them at the opposite poles, stated that the cause of the failure of the experiment was the solution of the gases in the mass of the liquid. By fusing platinum wires in thermometer tubes, this difficulty is avoided, and the gases may be then obtained and collected with the same facility as in ordinary eudiometric experiments. By arranging a series of such tubes, the operations may be almost indefinitely repeated. On raising an electrical kite, the author succeeded in obtaining the polar decomposition of water by atmospheric electricity. The observations were made in fine weather, when the atmosphere was not usually charged with electricity. Although the gases were easily collected and measured, from the delicate form of apparatus employed, the quantity of water decomposed in this case amounted only to one 700,000th of a grain in the hour.

'On certain Laws observed in the Mutual Action of Sulphuric Acid and Water,' by Mr. B. STEWART, in which reference was made to the existence of another new hydrate of sulphuric acid.

'On the Metals of the Alkaline Earths,' by Dr. MATTHIESSEN.—Dr. Matthiessen has succeeded in preparing the metals strontium and calcium, in the form of metallic reguli. The mode of preparation was illustrated by the apparatus used, and beautiful specimens of the metals, sealed up in tubes containing roche oil, and free from all air, were circulated among the members of the Section. Specimens of Lithian wire, prepared by Prof. Bunsen, at whose laboratory at Heidelberg the foregoing metals were prepared, were also exhibited.

'On the Basic Constituents of Coal Naphtha,' by Dr. GREVILLE WILLIAMS.

FRIDAY.

'On the Phosphorescence and Composition of Plate-Sulphate of Potash,' by Prof. PENNY.—The subject of this paper is a chemical product from kelp. It is called plate-sulphate of potash from the circumstance of its being crystallized in thick plates or slabs, consisting of the aggregate layers of successive crops of crystals. Beautiful specimens

of the salt, supplied by Mr. Paterson, one of the most extensive manufacturers of kelp products in Glasgow, were exhibited to the Section. There are several points in the chemical history of this salt possessing a high degree of scientific interest. The principal points alluded to by the author of the paper were, first, the peculiarity of the process by which it is obtained in slabs or slates; second, the brilliant phosphorescence of its crystals at the time of their formation; and third, its remarkable composition. The mode of obtaining it was fully explained, and the various circumstances that influence the emission of light from the salt, at the time of crystallizing, were minutely described.

Dr. DAUBENY laid on the table some fine weights made of aluminium. They were intended for use in chemical experiments.

'On the Chemical Constitution of the Water of the Clyde,' by Dr. S. MACADAM.

'On some Organic Compounds containing Metals,' by Prof. FRANKLAND.

'On the Decomposition of the Platinum Salts of the Organic Alkalies,' by Prof. ANDERSON.

'On a new Form of Cyanic Acid,' by Baron LIEBIG.—In the course of some experiments on the fulminate of mercury, I observed that that compound, when kept boiling in water, changed its colour, and lost its fulminating properties. On examining the change that had taken place in the composition of the fulminate, I discovered a new acid, which had exactly the composition of cyanuric acid, but which differed entirely from that acid in its properties, and in the properties of the salts which are produced with the alkaline bases—salts remarkable for their beauty and for the distinctness of their crystalline form. Taking for the equivalent of hydrated fulminic acid the formula C_2NO_2HO , the new acid is produced in a very similar manner. The elements of three equivalents of fulminic acid unite to form one equivalent of the new acid, to which I shall give the name of fulminuric acid. This acid is monobasic. Its salt of silver is soluble in hot water, and crystallizes from it in long, silky, white needles. The alkaline salts of the new acid are very easily prepared by boiling the fulminate of mercury with an alkaline chloride. The fulminate of mercury is first dissolved; then gradually two-thirds of the oxide of mercury precipitates, and the alkaline fulminate, with a certain quantity of chloride of mercury and potassium, remains in the solution. By employing the chloride of sodium, or the chloride of barium, we obtain, of course, a salt of the new acid, with a base of soda or of barytes. With chloride of ammonium an ammoniacal salt is obtained, the crystals of which are distinguished from all others by their adamantine brilliancy, and their high degree of power and lustre. These crystals belong to the Klinohombic system, and possess double refraction almost as strongly as Iceland spar. The hydrated acid is easily obtained by decomposing the basic lead salt by means of sulphuretted hydrogen. It has a strongly acid re-action, and when reduced by evaporation to a state of syrup, it is transformed by degrees into a crystalline mass, which dissolves in alcohol, and which, by the action of acids, is changed into carbonic acid and ammonia.

'On the Extraction of Metals from the Ore of Platinum,' by M. FRÉMY.—M. Frémy treated of the preparation of osmium, rhodium, and iridium from the residues of the platinum ores. The preparation of osmium according to the old method is attended with great difficulties and actual danger. M. Frémy proposed to prepare osmium by passing atmospheric air over the residual ore, heated in a porcelain tube. The volatile osmic acid is condensed in glass balloons, and the less volatile oxide of rathenum is found at the extremity of the heated tube. The rhodium remaining in the residual mass is separated from the other metal contained by chlorine gas at a high temperature.

'On the Allotropic Modifications of Chlorine and Bromine analogous to the Ozone from Oxygen,' by Prof. ANDREWS, who explained that ozone could be produced, first, by an electric spark; secondly, by the decomposition of acids and solutions, when coming into contact with the galvanic wire; and lastly, by oxidation.

'On the apparent Mechanical Action accom-

panying Electrical Transfer,' by Mrs. CROSSE, was read by the Chairman.

Dr. PLAYFAIR stated that at the last meeting of the Association Mr. Crosse, who is recently dead, had read a communication on some phenomena which took place in the electric current, and it was objected on that occasion, that it was possible the gold which was carried over might have been impure gold; and that it was owing to a solution of copper that was in the gold that these mechanical phenomena ensued. Mrs. Crosse, with a desire to show the accuracy of her husband's experiments, had since his death repeated the experiment with pure gold, and obtained the results mentioned in the communication.

'On Photo-chemical Researches, with particular reference to the Laws of the Chemical Action of Light,' by Prof. BUNSEN and Dr. H. E. ROSCOE.—Dr. Roscoe said, two years have been spent in experiments, the results of which are extremely complex and abstruse.

The PRESIDENT stated that it was proposed to grant a sum of money for the continuance of these researches.

'On a Process for obtaining Lithographs by the Photographic Process,' by Prof. RAMSEY.—Prof. Ramsey described a process by which Mr. Robert M'Pherson, of Rome, had succeeded in obtaining beautiful photo-lithographs,—specimens of which had been hung up in the Photographic Exhibition in Buchanan Street. The steps of the process are as follows:—1. Bitumen is dissolved in sulphuric acid, and the solution is poured on an ordinary lithographic stone. The ether quickly evaporates, and leaves a thin coating of bitumen spread uniformly over the stone. This coating is sensitive to light, a discovery made originally by Mr. Niepce, of Chalons. 2. A negative on glass, or waxed paper, is applied to the sensitive coating of bitumen, and exposed to the full rays of the sun for a period longer or shorter according to the intensity of the light, and a faint impression on the bitumen is thus obtained. 3. The stone is now placed in a bath of sulphuric ether, which almost instantaneously dissolves the bitumen, which has not been acted upon by light, leaving a delicate picture on the stone, composed of bitumen on which the light has fallen. 4. The stone, after being carefully washed, may be at once placed in the hands of the lithographer, who is to treat it in the ordinary manner with gum and acid, after which proofs may be thrown off by the usual process.—Prof. Ramsey then proceeded to state that the above process, modified, had been employed with success to etch plates of steel or copper, without the use of the burin:—1. The metal plate is prepared with a coating of bitumen, precisely in the manner noticed above. 2. A positive picture on glass or paper is then applied to the bitumen, and an impression is obtained by exposure to light. 3. The plate is placed in a bath of ether, and the bitumen not acted upon by light is dissolved out. A beautiful negative remains on the plate. 4. The plate is now to be plunged into a galvanoplastic bath, and gilded. The gold adheres to the bare metal that refuses to attach itself to the bitumen. 5. The bitumen is now removed entirely by the action of spirits and gentle heat. The lines of the negative picture are now represented in bare steel or copper, the rest of the plate being covered by a coating of gold. 6. Nitric acid is now applied as in the common etching process. The acid attacks the lines of the picture formed by the bare metal, but will not bite into the gilded surface. A perfect etching is thus obtained.

'On Photographic Researches,' by Mr. BARNET.

THURSDAY.

SECTION C.—GEOLOGY.

President—Sir R. I. MURCHISON.

Vice-President—Sir C. LYELL, C. DARWIN, Rev. Prof. SEDGWICK,

H. MILLER, A. C. RAMSAY.

Secretaries—Prof. NICOL, J. BAILEY, Prof. HARRISON.

Committee—J. W. DEWEY, Earl of ENNISKILL, Dr. FLEMING,

M. GRABAU, R. HUTTON, J. KELLY, J. E. PENTLAND, Prof. PHILIPS,

Prof. H. D. ROGERS, H. C. SORBY, W. MURRAY, J. W.

WOODALL, Prof. DE KONINCK, LIÈGE, Dr. BLACK, Sir Philip DE

MALPAS, Grey Egerton, Capt. BRIDGEMAN, M. LAURE, Rev. W. S.

SYMonds, J. JONES, R. ALLAN, Rev. W. BOWELL, Capt. Sir

E. BECHER, Dr. DAUBENY, W. GOURIE, C. MACLEAREN, Dr. BIGSBY,

W. GRAY, Dr. WRIGHT, J. JAMES, Prof. MACDONALD, D. FORBES,

G. W. FEATHERSTONHAUGH, R. CHAMBERS, J. PRESTWICK, jun.,

MILNE, J. P. FRAZER.

Sir R. I. MURCHISON in the chair.

'On the less-known Fossil Floras of Scotland,'

by Mr. HUGH MILLER.—Scotland has its four fossil Floras: its Flora of the Old Red Sandstone, its carboniferous Flora, its oolitic Flora, and that Flora of apparently tertiary age, of which His Grace the Duke of Argyll found so interesting a fragment, overlain by the thick basalt beds and trap tufts of Mull. Of these, the only one adequately known to the geologist is the gorgeous Flora of the coal-measures, probably the richest, in at least individual plants, which the world has yet seen. The others are all but wholly unknown; and the Association may be the more disposed to tolerate the comparative meagreness of the few brief remarks which I purpose making on two of their number—the Floras of the Old Red Sandstone and the oolite—from the consideration that that meagreness is only too truly representative of the present state of our knowledge regarding them, and that if my descriptions be scanty and inadequate, it is only because the facts are still few. How much of the lost may yet be recovered I know not; but the circumstances that two great Floras—remote predecessors of the existing one—that once covered with their continuous mantle of green the dry land of what is now Scotland, should be represented by but a few coniferous fossils, a few cycadaceous fronds, a few ferns and club mosses, must serve to show what mere fragments of the past history of our country we have yet been able to recover from the rocks, and how very much in the work of exploration and discovery still remains for us to do. We stand on the further edge of the great Floras of by-past creations, and have gathered but a few handfuls of faded leaves, a few broken branches, a few decayed cones. The Silurian deposits of our country have not yet furnished us with any unequivocal traces of a terrestrial vegetation. Prof. Nicol, of Aberdeen, on subjecting to the microscope the ashes of a Silurian anthracite which occurs in Peebles-shire, detected in it minute tubular fibres, which seem, he says, to indicate a higher class of vegetation than the algae; but these may have belonged to a marine vegetation notwithstanding. Associated with the earliest ichthyic remains of the Old Red Sandstone, we find vegetable organisms in such abundance, that they communicate often a fissile character to the stone in which they occur. But, existing as mere carbonaceous markings, their state of keeping is usually so bad, that they tell us little else than that the antequely-formed fishes of this remote period had swam over sea-bottoms darkened by forests of algae. The immensely developed flagstones of Caithness seem to owe their dark colour to organic matter, mainly of vegetable origin. So strongly bituminous, indeed, are some of the beds of dingier tint, that they flame in the fire like slates steeped in oil. The remains of terrestrial vegetation in this deposit are greatly scantier than those of its marine Flora; but they must be regarded as possessing a peculiar interest, as the oldest of their class in, at least, the British Islands, whose true place in the scale can be satisfactorily established. In the flagstones of Orkney there occurs, though very rarely, a minute vegetable organism, which I have elsewhere described as having much the appearance of one of our smaller ferns, such as the maidenhair spleenwort or dwarf moonwort. But the vegetable organism of the formation, indicative of the highest rank of any yet found in it, is a true wood of the cone-bearing order. I laid open the nodule which contains this specimen, in one of the ichthyolite beds of Cromarty, rather more than eighteen years ago; but, though I described it, in the first edition of a little work on 'The Old Red Sandstone' in 1841, as exhibiting the woody fibre, it was not until 1845 that, with the assistance of the optical lapidary, I subjected its structure to the test of the microscope. It turned out, as I had anticipated, to be the portion of a tree; and on my submitting the prepared specimen to one of our highest authorities, the late Mr. William Nicol, he at once decided that the "reticulated texture of the transverse section, though somewhat compressed, clearly indicated a coniferous origin." I may add, that this most ancient of Scottish lignites presented several peculiarities of structure. Like some of the Araucarians of the warmer latitudes, it exhibits

no lines of yearly growth; its medullary rays are slender, and comparatively inconspicuous; and the discs which mottle the sides of its sap chambers, when viewed in the longitudinal section, are exceedingly minute, and are ranged, so far as can be judged in their imperfect state of keeping, in the alternate order peculiar to the Araucarians. On what perished land of the early Palæozoic ages did this venerably antique tree cast root and flourish, when the extinct genera *Pterichthys* and *Cocco-steus* were enjoying life by millions in the surrounding seas—long ere the Flora or Fauna of the coal-measures had begun to be! The Caithness flagstones have furnished one vegetable organism apparently higher in the scale than those just described, in a well-marked specimen of *Lepidodendron*, which exhibits, like the Araucarian of the Lower Old Red, though less distinctly, the internal structure. It was found about sixteen years ago in a pavement quarry near Clockbriggs—the last station on the Aberdeen and Forfar Railway—as the traveller approaches the latter place from the north. Above this grey flagstone formation lies the Upper Old Red Sandstone, with its peculiar group of ichthyic organisms, none of which seem specifically identical with those of either the Caithness or the Forfarshire beds; for it is an interesting circumstance, suggestive surely of the vast periods which must have elapsed during its deposition, that the great Old Red system has its three distinct platforms of organic existence, each wholly different from the others. Generically and in the group, however, the Upper fishes much more closely resemble the fishes of the Lower, or Caithness and Cromarty platform, than they do those of the Forfarshire and Kincardine one. In the uppermost beds of the Upper Old Red formation in Scotland, which are usually of a pale or light yellow colour, the vegetable remains again become strongly carbonaceous, but their state of preservation continues bad—too bad to admit of their determination of either species or genera; and not until we rise a very little beyond the system do we find the remains of a Flora either rich or well preserved. But very remarkable is the change which at this stage at once occurs. We pass at a single stride from great poverty to great wealth. The suddenness of the change seems suited to remind one of that experienced by the voyager when, after traversing for many days some wide expanse of ocean, unvaried save by its banks of floating sea-weed, or where, occasionally and at wide intervals, he picks up some leaf-bearing bough, or marks some fragment of drift-weed floating past, he enters at length the sheltered lagoon of some coral island, and sees all around the deep green of a tropical vegetation descending in tangled luxuriance to the water's edge—tall, erect ferns, and creeping *Lycopodiaceæ*; and the pandanus, with its aerial roots and its screw-like clusters of narrow leaves; and high over all, tall palms, with their huge pinnate fronds, and their curiously aggregated groups of massive fruit. In this noble Flora of the coal-measures much still remains to be done in Scotland. Our Lower Carboniferous rocks are of immense development; the limestones of Burdie House, with their numerous terrestrial plants, occur many hundred feet beneath our mountain limestones; and our list of vegetable species peculiar to these lower deposits is still very incomplete. Even in those higher carboniferous rocks with which the many coal workings of the country have rendered us comparatively familiar, there seems to be still a good deal of the new and the unknown to repay the labour of future explorers. It was only last year that Mr. Gourlie, of this city, added to our fossil Flora a new *Volkmannia* from the coal-field of Carluke; and I detected very recently in a neighbouring locality, though in but an indifferent state of keeping, what seems to be a new and very peculiar fern. There is a *Stigmara*, too, on the table, very ornate in its sculpture, of which I have now found three specimens in a quarry of the coal-measures near Portobello, that has still to be figured and described. In this richly-ornamented *Stigmara* the characteristic arcolæ present the ordinary aspect; each, however, forms the centre of a sculptured star, consisting of from eighteen to twenty rays, or rather the centre of a sculptured

flower of the Composite order, resembling a garden daisy. The minute petals—if we are to accept the latter comparison—are ranged in three concentric lines, and their form is irregularly lenticular. Even among the vegetable organisms already partially described and figured, much remains to be accomplished in the way of restoration. The detached pinna of a fern, or a few fragments of the stems of *Ulodendron* or *Sigillaria*, give very inadequate ideas of the plants to which they had belonged in their state of original entireness.

The DUKE OF ARGYLL adverted to the great advantage which a geologist would derive from a visit to Helmsdale, in Sutherlandshire. There was a perfect profusion of fossil wood,—so much so, that recently, along with two friends, he had collected several cart-loads of fossil trees, showing the course of creation.—The paper gave rise to a long and animated discussion, in which Sir RODERICK I. MURCHISON, Prof. PHILLIPS, Sir CHARLES LYELL, and others took part.

'On the Lowest Sedimentary Rocks of Scotland,' by Prof. HARKNESS.

'On the Geology of the Dingle Promontory, in the South-west of Scotland,' by Prof. HARKNESS.

'On the Glacial Phenomena of the Lake District of England,' by Mr. JAMES BRYCE.—Mr. Bryce pointed out the peculiar geological structure of the district, illustrated by a coloured map. There are three gigantic districts, encircled by slate of three different ages, the granites and slates being all very distinct and easily recognized when found at a distance. These rocks are found to be transported to great distances, in various directions, across valleys and over high ridges, and the cause adequate to produce the phenomena is a matter still in dispute among geologists. In order to elucidate, if possible, this obscure subject, Mr. Bryce had carefully examined the many mountain valleys radiating in all directions from the high mountain mass of the Great Gabel, and finds various evidences of the former action of glaciers in all these valleys. They seem to have descended from a nucleus in the higher bosoms of the mountains, to have filled the valleys, and spread out over the low country at the base, all round the lake district. In confirmation of this view, various arguments were stated.

A discussion took place, in which Prof. RAMSAY, Mr. R. CHAMBERS, Mr. SIMMONDS, Malvern, Mr. M'LAREN, of Edinburgh, Mr. HUGH MILLER, Prof. PHILLIPS, and the PRESIDENT took part. A good deal of diversity of opinion prevailed as to the glacial action.

'On Ancient Canoes found at Glasgow,' by Mr. J. BUCHANAN.

'On the Probable Maximum Depth of the Ocean,' by Mr. W. DARLING.—Mr. Darling propounded the theory, that as the sea covers three times the area of the land, so it is reasonable to suppose that the depth of the ocean, and that for a large portion, is three times as great as the height of the highest mountains.—After a few remarks from Prof. PHILLIPS, giving a summary of all that is known on this subject, the Section adjourned.

FRIDAY.

'On the Fossils of the Coal Formation of Nova Scotia,' by Mr. J. W. DAWSON.—The paper was illustrated by a rich collection of specimens. Mr. Dawson said that the strata of the coal-measures in Nova Scotia extend to a depth of no less than 14,000 feet, containing sixty distinct surfaces, covered with plants and trees. He spoke of the marine and land deposits collected in the deltas, where the roots of the *Calamites* held together the mud which, forming into flats, sank down to receive others.

An interesting conversation, in which Mr. HUGH MILLER, Sir CHARLES LYELL, Prof. SEDGWICK, Prof. ROGERS, and Mr. PAGE took part, followed the reading of the paper,—in which it was shown that many of the fossil remains described by Mr. Dawson as existing in the coal formations of Nova Scotia were to be found also in the coal-fields of Scotland.

'On New Forms of Crustacea from the District of Leemahagow,' by Mr. R. SLIMOND.—Mr. PAGE described the specimens.

'New Geological Map of Europe,' exhibited by Sir R. I. MURCHISON and Prof. NICOL.—The map was explained by the Chairman, one of its authors.

'Notice of the Discovery of Ichthyosaurus and other Fossils in the Northern Expeditions,' by Sir E. BELCHER, R.N. The notices were by Prof. OWEN 'On the Ichthyosaurus,' and by Mr. J. W. SALTER 'On some Arctic Carboniferous Fossils.'—Sir E. Belcher said, I had hoped Prof. Owen would have been present to explain the peculiarities of these fossil remains of the Ichthyosaurus, and that Mr. Salter would also have given in person his views of other fossils found at and near the same locality. The position where the remains of the Ichthyosaurus were found is on the summit of Exmouth Island, about 700 feet above the level of the sea. The upper stratum is limestone, containing numerous fossils, and is about thirty feet in thickness. The inferior stratum is entirely of red sandstone, of a deep red colour, which gave to the island, in the first instance, the name of Red Island.

'On some of the general Mechanical Structures of Limestone,' by Mr. H. C. SORBY.—This paper was illustrated by diagrams, and would scarcely be intelligible without them.

'On the Meridional and Symmetrical Structure of the Globe, its Superficial Changes and the Polarity of all Terrestrial Operations,' by Mr. E. HOPKINS.—Mr. Hopkins's paper was illustrated by maps and diagrams, including a section, on a large scale, of the Cordilleras, from the plains of the river Meta to the shores of the Pacific Ocean. Amongst other speculations, he said that 9,000 years ago the site on which London now stands was in the torrid zone, and according to perpetual changes in progress, the whole of England would in time arrive within the Arctic circle.—The views of the expositor were strongly controverted by Prof. RAMSAY and Prof. NICOL.

THURSDAY.

SECTION D.—ZOOLOGY AND BOTANY.

President.—REV. DR. FLEMING.
Vice-Presidents.—DR. SHARPEY, DR. A. THOMSON, DR. CARPENTER, DR. DICKINSON.

Secretaries.—DR. LANKESTER, W. KEDDIE.
Committee.—Prof. RALFOUR, Prince Bonaparte, W. J. Burchell, Dr. Dickie, J. Gould, W. Gould, Dr. Inglis, Sir W. Jardine, Prof. Kölliker, R. Patterson, Prof. Retzius, Sir J. Richardson, Dr. Steets, Prof. Syme, N. B. Ward, P. L. Solator, Prof. Allman, Prof. J. H. Corbett, Mr. McAndrew, Prof. McDonald, Rev. Mr. Higgins, Prof. Wyville Thomson, Dr. Camps, Rev. W. Symonds, Prof. Bennett, Prof. Low, Rev. C. P. Mills, Dr. Coldstream, Mr. H. Deane, Dr. Lowe, Mr. A. Murray, C. Darwin, J. T. Syme.

PHYSIOLOGICAL SUB-SECTION.

Chairman.—Prof. A. THOMSON.
Vice-Chairman.—Prof. BUCHANAN, DR. A. D. ANDERSON, Prof. BENNETT.

Secretaries.—Prof. J. H. CORBETT, DR. J. STRUTHERS.

The PRESIDENT, on taking the chair, alluded to the loss the Section had sustained in the deaths of the late Prof. Edward Forbes, Dr. Landsborough, Dr. Johnston, and Mr. Dillwyn. He also gave a short view of the present state of natural history science in this country, and pointed out especially the almost universal neglect of zoology as a distinct branch of science.

'Remarks on the Effects of Last Winter upon Vegetation at Aberdeen,' by Dr. DICKIE.—The lowest temperature was recorded on the 15th of February, viz., minus 1° of Fahrenheit's Thermometer,—the mean temperature of the entire month having been 26·8° Fahr. The effect of such severe frost was very considerable on many plants which for several years previously had been in a thriving condition, and were supposed to be sufficiently hardy to entitle them to a place among species fitted for the garden or the forest. *Rhododendrons* were more or less injured, and many of them destroyed down to the point where they were protected by the snow, which had fallen copiously. Budded roses were, generally speaking, destroyed, the stock being uninjured. Even the Ayrshire rose (a variety of *Rosa arvensis*) was generally killed to the ground. Common roses and cabbage roses were uninjured. Several interesting and valuable species of pine were either severely injured or killed to the ground, as *Pinus Russeliana*, *P. macrocarpa*, *P. insignis*, *P. Teocote*, and *P. longifolia*. Plants of *Araucaria imbricata*, which had resisted the influence of previous winters, were killed to the ground. Generally speaking, all of this species unprotected by snow were destroyed. Species of *Tasodidum*, *Cupressus*, *Fitzroya*, *Saxegothea*, and *Cephalotaxus* were injured or killed to the ground. Even large plants of the Irish yew were destroyed down to the part protected by

snow. The common and Portugal laurels, the holly, and others, were more or less injured, and in some cases the growth of ten or more years destroyed. Among wild plants the influence of the low temperature was most obvious upon whin and broom, which in exposed places were killed down to the part covered by snow, and in not a few instances as far as the ground. Respecting the exotic trees and shrubs reported as either materially injured or totally destroyed, it would be rash to infer that this indicates their inability to resist low temperatures under any circumstances. In every instance it was observed that the destruction was greater in low than in high localities, and this even in the same garden. In one garden, a low sheltered spot, the great destruction occasioned by the frost of February was attributed by the proprietor to the fact that there was continued growth till January, the sudden transition to a low temperature causing the destruction of parts not properly matured. The effects of last winter in different parts of the United Kingdom has demonstrated that a temperature approaching zero of Fahrenheit occasions almost irreparable damage to many introduced species; and that even some indigenous plants, as the whin and broom, are liable to periodical destruction of all the part above the soil. Such facts also enable us better to appreciate that admirable arrangement by which most of our native perennial species are able to survive the most inclement season. The subterranean stock is protected by the snow which accumulates in severe winters and the soil in which it is imbedded; the reviving influence of spring stimulating to the upward development of the subterranean buds and the formation of leaves, flowers, and seed. It appears unnecessary to urge at any length the importance of recording the influence of different seasons upon exotics as well as on our native species. Much has been done of late years to increase the number of foreign plants likely to bear free exposure in our climate. The experience of last winter has shown that too sanguine expectations have been formed regarding some, and that our collections are likely to periodical thinning occasioned by the influence of low temperatures on species which are more delicate than had been supposed. The loss of time and of capital occasioned by such occurrences render these inquiries more than subjects of interest to the physiologist merely. Every garden in the kingdom, whether public or private, ought to be considered as an experimental establishment; the subjects of experiment are already provided, viz., the trees and shrubs which have been introduced, and the varying seasons are the agents whose influence we ought to observe and record. A continued series of such observations would ultimately lead to important results, and we should cease to hear of valuable soil encumbered by plants which must ultimately succumb under the influence of unusually severe winters. It is the interest of all parties to give aid in collecting the kind of information to which we have been referring; and in our gardens and our forests we cannot fail ultimately to reap important results from the accumulation of such practical knowledge.

The Rev. H. HIGGINS stated, that the effect of the late severe cold had been to cause many plants to flower and fruit which did not usually do so. He stated that in a bryarium, where he was cultivating British mosses, that six species of sphagnum had fruited that he had never before seen in fruit. He also observed, that, although it had been anticipated that the severe cold would destroy all insect life, during this summer there had been an unusual number of insects produced.—Prof. BALFOUR said, it was a curious fact that our native plants had suffered more than those which were exotic.—Mr. N. B. WARD stated, that cold acted upon both plants and animals much more during a wind than when the air was still. Hence, in his cases plants grew much better at the same temperature than in the open air.—Mr. DAWSON, of Nova Scotia, observed that, in America, winters with alternating frost and thaw were much more destructive of life than continuous cold.—Prof. ALLMAN gave an account of the effects of cold at Dublin. He thought the same species of plants were more patient of cold in northern

than in southern situations.—Dr. FLEMING drew attention to a well-known fact, that wind deflected from a wall was much more destructive in its effects than a direct current of air.

'On the Species of Meriones and Arvicolæ found in Nova Scotia,' by Mr. J. H. DAWSON.—There appears to be two species of Meriones in Nova Scotia:—one of them is identical with *M. Labradorius* of Sir J. Richardson, differing only in some trifling characters; the second species is smaller, darker coloured, and has coarser hair. The average dimensions of three adult specimens are:—length of head and body, 3 inches 6 lines; tail, 4 inches 8 lines; tarsus and foot, 1 inch 4 lines. The author had not found any description of this last species; but would not desire to name it as a new species until he had made further inquiry. Should it prove to be new, he would claim for it the name *M. Acadicus*. This species inhabits grain fields. It does not burrow, but prepares forms in sheltered places, lying very close; and, when disturbed, escaping by a few rapid leaps or bounds. It feeds by day, and does not appear to prepare any store of food for winter. It is usually stated that these leaping mice are adapted to level and open countries; it therefore appears singular that in a country originally densely wooded two species should exist. Their natural habitat may have been those places from which the woods have been removed by fire, and replaced by herbaceous plants and shrubs. The most common Arvicola in Nova Scotia is the *A. pennsylvanica*, which in form and habits closely resembles the European *A. vulgaris*. It burrows, forming a neat nest, having two entrances each with a sort of ante-chamber to enable the animal to turn itself. It excavates galleries under the snow in winter, devouring grass-roots, bark of trees, &c.; and at the same season it often resorts to barns and out-houses. Some other specimens of Arvicola were exhibited, closely approaching in their characters to the *A. Novboracensis*. The white-footed mouse *Mus leucopus* also occurs in Nova Scotia, and the domestic mouse and brown rat have been introduced and naturalized, while of the black rat only a few specimens have been found in the city of Halifax. It was stated that some of the specimens exhibited had been collected by Mr. Winton and Mr. Downes of Halifax.

PRINCE CHARLES LUCIEN BONAPARTE wished to impress upon naturalists the importance of studying living animals. Unfortunately most of those who described animals described them from stuffed specimens: hence the same animal was described over and over again with different names, and great confusion was introduced into science. Mr. Dawson's contributions were valuable, because his observations had been made on living animals. It was useless to lay down any positive law for making species, for there were no mathematics in natural history.

Dr. LANKESTER read the Report of a committee appointed for drawing up a list of names of typical plants, animals, and minerals for the illustration of popular museums. The Report contained suggestions for the fitting-up of museums and lists of birds, crustacea, zoophytes, plants, and minerals to be used in illustrating the different forms of objects in nature.

Mr. PATTERSON exhibited a series of Zoological Diagrams which he had prepared at the request of the Government Department of Science and Art.

These diagrams excited much interest in the Section. PRINCE BONAPARTE thought they were not quite up to the science of the day, and hoped Mr. Patterson would, in another edition, make alterations in accordance with Prof. Owen's views of the classification of animals.—Mr. Patterson stated, they were intended more particularly to illustrate his little book, 'Zoology for Schools.'—The DUKE OF ARGYLL suggested that Mr. Patterson should introduce into the series diagrams illustrative of the present views of naturalists with regard to the homologies of the skeleton of vertebrate animals, and also the general relations of the structure of the Mollusca and Articulata.

'Singular Mortality amongst the Swallow Tribe,' by Mr. E. J. LOWE.—There has seldom been recorded a more singular circumstance than the mortality

amongst the swallow tribe, which occurred on the 30th and 31st of May in the present year. The unusually cold weather for this advanced season appears to have operated in producing the destruction of the greater number of this useful tribe of migratory birds. The severity of the weather causing a scarcity of insects (the ordinary food of the swallow), and rendering the birds too weak to enable them to search for food. On the 30th of May the swallows became so tame that they flew about the legs of persons, and could be caught without difficulty, and on the following morning most of them lay dead upon the ground or in their own nests. In this neighbourhood (near Nottingham) the greatest mortality was occasioned amongst the house swallow (*Hirundo rustica*), yet solely because this bird predominates. Near the Red Tunnel at Thrumpton there are great numbers of sand-martins (*Hirundo riparia*), and there, in a saw-pit on the banks of the river Soar, hundreds congregated and died. At Borrowash, near the Derwent river, there are very many white martins (*Hirundo urtica*); they also congregated and died, lying ten and twelve deep on the different window-sills. Several persons opened their windows, and the birds were very willing to take shelter in the rooms, exhibiting no disposition to depart. Many were kept alive in the different houses by being fed with the aphids of the rose-tree, the only procurable insect. At Bulwell, Wollaton, Long Eaton, Gawley, and many other places, the same fearful mortality occurred. Farmers opened their barn-doors to admit the birds. To show the extent of the deaths, it may be mentioned that at one place where previously there were fifty nests occupied, only six pair survived to take possession of them. The manner in which they congregated was a curious feature in the occurrence. A swallow would fly round a heap of dead and dying companions, and then suddenly dart down and bury itself amongst them. On the same days, in the vale of Belvoir, and in parts of Nottinghamshire and Lincolnshire, several hundred newly-shorn sheep perished.

'On Vivaria, in their economical and sanitary Application to Agriculture and other purposes of Life,' by Mr. J. FULTON.—This paper consisted of suggestions in carrying out, on a most extended field, the application of glass to cultivation, on the principle suggested by Mr. Ward in his cases.

Dr. LANKESTER read a paper from Dr. DUNCAN, 'On Impregnation in Phanerogamous Plants.'

A discussion ensued, in which Prof. BALFOUR, Dr. DICKIE and Dr. COBOLD joined,—and all agreed that Dr. Duncan had introduced no new views of importance.

FRIDAY.

Prof. BALFOUR called attention to an enormous specimen of *Polyporus giganteus*, then in the yard of the College, and which, on account of its great size, could not be brought into the meeting-room.

'Description of a New Trematode infesting the Giraffe,' and 'Description of a Malformed Trout,' by Dr. COBOLD.

PRINCE BONAPARTE made some observations on the importance of malformations of this kind being recorded, as sometimes they led to permanent varieties which were recorded as species. He thought the present specimen more nearly approached the genus *Conegonus* than the genus *Salmo*.

'Report on the Recent Additions to our Knowledge of the Zoology of Western Africa,' by Mr. A. MURRAY.—After referring to the fact that so little was known of the natural history of Western Africa, he proceeded to say—I should not have thought of making any report on the subject, had it not been for a new source of information which has been opened to the Scottish naturalists within the last two or three years, which I have thought it might be useful to our Southern friends to be made aware of, as a means likely to supply much of the information we want upon at least one part of the coast; and I hope also to serve as an example which may produce similar results elsewhere—I allude to the mission stations which have been established at Old Calabar. It is only two or three years ago since the Rev. H. Waddell, on his temporary return to this country,

brought with him, besides other objects of interest, a few bottles of snakes and insects. These were exhibited to the Royal Physiological Society of Edinburgh, in December, 1852; and every encouragement was given by the members of that Society to Mr. Waddell, to proceed in the working out of what promised to turn out a mine of interest. Mr. Waddell returned to Old Calabar, and enlisted Mr. Goldie and Mr. Thomson in the pursuit; and the consequence has been that there has already been received from these gentlemen a large amount of interesting new species,—a number of which have since been described and published, and others of which are in course of preparation for publication. Little has been done in the Mammalia. M. Dureau de Lamalle has published in the *Annales des Sciences Naturelles* some particulars regarding the Great Chimpanzee, or *Troglodytes Gorilla*, found on the river Gaboon; and, in 1852, Dr. Kneeland of Boston published details of the skeleton of this species. Mr. Fraser, after his return from the Niger Expedition in 1843, published, in the Proceedings of the Zoological Society, a description of a new Bat from Fernando Po, as well as a new Pouched Rat from the same place. Dr. J. E. Gray described, in the same Proceedings, a new *Manis*; and, in 1852, he described in the *Annals of Natural History*, a new Wart Pig (*Cheiroptamus pictus*) from the Cameroon river. As to ornithology, more has been done of late years. A considerable number of new species were brought home by the officers of the Niger Expedition above referred to, and were described partly by Mr. Strickland and partly by Mr. Fraser. And, more recently, M. Verraux has described a number of species from this coast. Several of these were received from Old Calabar simultaneously (or nearly so) with their publication by M. Verraux. A number of new fishes has been received from Old Calabar, the most interesting of which is an electric fish, a *Silurus*, which I have since described and published under the name of *Malapterurus Beninensis*. In addition to the information which is given in my account of the fish in the *Edinburgh New Philosophical Journal*, I have since received some additional particulars from Mr. Thomson. He informs me that its electrical properties are made use of by the natives as a remedy for their sick children. The fish is put into a vessel of water, and the child made to play with it; or the child is put into a tub of water in which several fishes are placed. It is interesting to find a popular scientific remedy of our own anticipated by the unlettered savage. Mr. Thomson also mentioned an instance of the electric power of this fish, which may be worth mentioning. He had a tame heron, which, having been taken young, had never had the opportunity of searching for and choosing its food for itself. It was fed with small fishes; and on one occasion there happened to be a newly-caught electric fish among them, which it swallowed, but immediately uttered a loud cry, and was thrown backwards. It soon recovered, but could never afterwards be induced to dine upon *Malapterurus*. This species I believe to be found all along the Guinea Coast. Dr. Baikie informs me that he had seen a small species at Fernando Po, which appeared to him to correspond with the description of this species. Among other interesting fish sent by Mr. Waddell, there is a species of *Lophius*, or mud fish, which appears undescribed. The curious habits of this semi-amphibious family, of crawling out of the water, using their fore fins like legs, and then sitting staring about with their great goggle eyes, is noticed by Mr. Waddell as very marked in this species. If placed in a basin, it will crawl up the side, and sit on the edge looking about. A new pipe fish has also been received, as well as some other species of fishes which I have not yet had the opportunity of determining. A very considerable number of snakes, lizards, &c. have also been sent. Among the lizards there was a new *Monitor*, which Dr. Lowe exhibited to the Royal Physical Society, approaching near to the *Monitor pulcher*, besides specimens of the chameleon. As to the Mollusca, Dr. Greville not long ago exhibited to the Royal Physical Society a very interesting collection of land

and freshwater shells, which had recently been transmitted to him by the Rev. Mr. Goldie. *Bulimus Wrightii* was the most valuable shell of the series,—a handsome species, then described only a few months before by Mr. Sowerby, jun., from a single specimen picked up by a shipwrecked sailor. Other species of the same genus were *B. Numidicus* (Reeve), and *B. spectralis* (Reeve); of *Achatina* there was *A. striatella* (Rang), and a large one which Dr. Greville had been unable to determine, nearly allied to *A. marginata*, but more ovate in form, and distinguished by a red pillar. There were also three small *Helices*, belonging to sections difficult of determination, one of them probably new. Fine specimens occurred of *Melania Owenii* (Gray), which appears to be generally distributed in Western Africa; and of *M. mutans* (Gould), which Dr. Greville had previously received from Liberia. *Neritina Perrottetiana* (Recluz), and a fine bivalve, probably a *Cyrene*, were the remaining forms. In insects, however, more has been done than in any other branch. I shall not go back to the insects of Angola, described by Erichson about ten years ago, or the species from Congo, described by Mr. White about the same time; but I think I may be excused for referring to Westwood's 'Arcana Entomologica,' although a few years have elapsed since its publication, seeing that the most attractive part of that work is occupied with the West African Goliaths, of which the largest and finest species known is the entomological ornament of this University (the almost unique specimen of the *Goliathus giganteus*). Very large collections of Coleoptera have been received from our correspondents in Old Calabar; so much so, that we are now in a position not only to make up a pretty accurate list of the Coleoptera of that country, but also to form an opinion as to their relative numbers. Such a list I am in the course of preparing, intercalating descriptions of the new species as they occur; and, as a large proportion of them are undescribed, the new information will be considerable. Before I thought of doing so, however, I had supplied my friend M. Chevrolat (who is our great authority in Longicorns) with a set of the new species of that group, and he has lessened my task by describing thirty-one of them in Guérin's *Revue Zoologique*. As is always the case in warm climates, the Geodaphaga are comparatively few, both in number of species and individuals—the whole number of species which I have received not exceeding fifty. One or two very fine species, however, occur among them. No *Hydro-cantharida* have been received. This may arise from their not having been sought for. But I am inclined to think that, in point of fact, the water-beetles are not numerous in these latitudes. As might be expected, the burying beetles have not been found there; the climate would not allow their nidus to remain as food for the larvae long enough for their growth—a consideration which suggests to me a curious change in habit suited to the climate, which was mentioned to me by Mr. Thomson regarding the Aphodii. In this country, as entomologists are aware, that family lay their eggs in dung, in which the larvae feed until they come to maturity, and then descend into the earth to undergo their transformation; and in walking over the fields we find every patch of dung swarming with their larvae. At Old Calabar we would find nothing of this. The heat is so great that in a couple of days the patch of dung would be quite dried up. The Aphodii, therefore, have a different habit. As soon as the dung has been dropped they come, and each bores a hole under it, and carry down a small quantity there to feed, and lay their eggs; so that they, at one and the same time, clear away the refuse from the ground, and supply it as manure to the roots of the plants. As already mentioned, the Longicorns have furnished a considerable number of novelties, many of great beauty; but with the exception of one or two species, which occur in quantity, the individuals have been very scarce. It is, however, in the Phytophages that nature seems to have most revelled here. Their number is great both to individuals and species, and a great portion of them are undescribed. Many new genera also occur. The number of brilliant little *Cassidas* is also remarkable. The *Heteromeres*

are numerous in individuals; not so much so in species. A number of Mr. Westwood's recently described species have occurred. Of the *Brachelytra*, only two representatives have been found,—both flat, as if they lived under bark, and forming the passage to *Platysoma* and *Hister*. A single new *Pausus* has also been found. Members will recollect that it was on this coast that the first *Pausus* known was met with. *Azelius* was sitting at table in the dusk, when a small insect dropped upon his paper, carrying two globe-shaped antennae like coach-lanterns on its head, both giving out a feeble light. This was the *Pausus sphaerocephalus*. Mr. Westwood has since described a large number of species; and he seems to question the accuracy of *Azelius*, so far as regards the light given out by the antennae, as that has not been observed since, and many of the species have hard and untransparent globes on the antennae. The globes in *Azelius*'s species, however, are semi-transparent; and the habit of life of many of them would seem to render their luminosity not improbable, for they live in ants' nests, and it would surely be very convenient to have a pair of lanterns fastened like a Davy lamp on their head, to light them on their way through the dark galleries. If it is so, it shows how diversely nature sometimes acts under the same circumstances. Here she provides a light for the darkness; while in other instances, where species live wholly in the dark, as in the caves of Carniola, Kentucky, &c., she takes away their eyes altogether as useless appendages. The Hemiptera are largely represented in Old Calabar. A great proportion of them are undescribed; but M. Signoret has undertaken to describe the most striking of the new species, and has already described and figured one or two in the *Annals of the Entomological Society of France*. There seems a good many spiders. A large *Mygale* was exhibited to the Royal Physical Society by Mr. Logan; and the species of *Epiura clavipes*, described by Palisot de Beauvois, appears common. Dr. Lowe, of Edinburgh, also described two species of gigantic *Julus*. A word regarding the geographical relations of the insects of this country, and I have done. The most striking circumstance is the relationship of many of them to South American species. We not only find many representatives of American genera, but actually species of genera hitherto only known as South American; and in some instances even the same species occurs, such as *Malodon maxillosum*, *Bostrichus muricatus*, &c. Putting aside these latter as being wood-feeders, and therefore capable of being introduced by floating across the ocean, we have the genera *Galerita*, *Parandra*, *Ceme*, *Smocidium*, and others now containing African species. This, however, is a subject which deserves more extended observation before any sound deduction can be drawn from it; and, besides, it is one which does not enter into the proper scope of this paper, and on which I cannot, therefore, now enlarge.

The reading of this paper produced a discussion on the zoology of Africa, and the relations of its forms of animal life to those of other parts of the world, in which PRINCE BONAPARTE, the Rev. Mr. HIGGINS, Dr. FLEMING, Mr. N. B. WARD, and others took part.

'Abstract of the Natural History of a recent voyage up the river Tchadda,' by Dr. BAIKIE.

Mr. W. OLIPHANT, Treasurer R.P.S.E., exhibited the skull of a *Manatus Senegalensis*.

'On the Geological Distribution of Plants,' by Mr. J. BAKER.—The title of this paper explains its object. It led to a long discussion on the possibility of classifying plants according to the geological strata on which they are found.

Prof. BALFOUR said the effort had often been made without success. To those inquiring in this direction Mr. Baker's paper would clearly indicate the difficulties of the subject, and he mentioned a number of plants which might as consistently go into one or other of the divisions established by Mr. Baker.—Dr. FLEMING stated that the growth of plants was determined by the superficial deposits on rocks, and not on the rocks themselves.—Dr. DICKIE stated that, in some few instances, in the North of Scotland, he had observed the kind of rock having an influence on vegetation.—Dr. LAM-

KESTER pointed out that the growth of plants was frequently determined by the physical nature of the soil quite independent of its chemical composition, and this point was to a considerable extent overlooked in estimating the nature of the earth's surface in relation to the distribution of plants.

'On the Homologies of the Lepismidae,' by Dr. DICKIE.

'Report on the British Amphipodous Crustacea,' by Mr. SPENCE BATE.—The report was accompanied by a series of beautiful drawings, and the author stated that he had succeeded in adding between fifty and sixty new species of these creatures to the British Fauna. The drawings of all the British species will be given in a joint work by Mr. S. Bate and Mr. Westwood, now on the point of publication.—The continuation of the Report on Isopodous Crustacea will be presented to the next meeting, at Cheltenham.

'Report of the Belfast Dredging Committee' was read by Mr. PATTERSON, who exhibited specimens of *Virgularia mirabilis*, with drawings of the Polyps by Prof. WYVILLE THOMPSON.

Dr. LANKESTER exhibited the model of a dredge, invented by Mr. Dempster. The naturalists did not regard it as superior for natural history purposes to the more simple instruments now so generally used by those who cultivate marine zoology.

'On New Forms of Microscope, adapted for Physiological Demonstration,' by M. NACHET.

In the Physiological Sub-Section of the Section D. the following papers were read:—

'On the Law of Molecular Elaboration in Organized Bodies,' by Prof. J. H. BENNETT.

'On the Hand of the Paraguayan Man,' and 'On the Pelvis of a Giant Girl,' by Prof. RETZIUS.

'On the Male of the Argonauta,' and 'On the Physiology of the Spermatozoa,' by Prof. KÖLLIKER.

'Observations on the Spermatozoa,' by Prof. ALLEN THOMSON.

THURSDAY.

SECTION E.—GEOGRAPHY AND ETHNOLOGY.

President—Sir J. RICHARDSON.
Vice-Presidents—Admiral BERRILL, A. K. JOURNISTON, Sir R. L. MURCHISON, General Sir C. PASLEY.
Secretaries—NORTON SHAW, R. CULL, W. G. BLACKIE.
Committee—Capt. Allen, Sir E. Schimper, Dr. Bigsby, Prince L. Bonaparte, Consul Brand, J. Brown, W. Camps, Capt. Collinson, C. Darwin, Prof. Milne-Edwards, A. J. Ellis, W. Ewing, Rev. J. Gemmel, the Earl of Harrowby, F. Hindmarsh, Dr. Hume, Dr. J. Lee, the Lord Provost of Glasgow, J. Macmah, Dr. Oppert, J. Mayer, J. McNeilland, R. Monckton Milnes, Consul H. Parkes, A. Peckover, Sir J. Ramsay, Prof. W. Ramsay, Col. Rawlinson, G. Rendie, Prof. Retzius, Staff-Surgeon P. Robertson, Col. Sabine, Rev. Dr. Scoresby, J. Smith, of Jordanhill, J. Smith, of Bombay, J. J. Stainton, Col. Sykes, J. K. Waite, Rev. Prof. Whewell, T. Wright, J. B. Yates.

'Report of the late Expedition up the Niger and Tchadda Rivers,' by Dr. BAIKIE, R.N., addressed to the Lords of the Admiralty.—After detailing the preparations he had made for his expedition, Dr. Baikie, dating on board the African mail-steamer Bacchante, Sierra Leone, January 2, 1855, reports as follows:—"We have explored about 250 miles of the River Tchadda beyond the furthest point attained by Allen and Oakfield in 1833, and reaching to about 50 miles of the meeting of the Faro and Binue, have established the identity of the Tchadda with the Binue. We have established the navigable nature of the river during the rainy season up to our furthest point; and seemingly, as well as from the information of the natives, considerably beyond. We have encountered several new tribes; have inquired into the resources, &c. of the various countries; and have ascertained the friendly disposition of the natives. From numerous careful observations, we can almost demonstrate the incorrectness of Dr. Barth's astronomical positions: our furthest point east being 11° 30', at which time we were considerably beyond Hamarua, and almost certainly, at the furthest, within 50 miles of the junction of the Faro, which was placed by that gentleman in longitude 14° east." Dr. Baikie states, as the result of his expedition, that he would be able to lay before the Admiralty a tolerably accurate chart of the entire rivers, and materials for a much improved map of the surrounding countries. He proceeds,—"With the assistance of Mr. Crowther, we have satisfied ourselves of the general desire of the natives to receive instruction and to admit teachers,

and, also, of their wishes to carry on trade with us. We are enabled to report favourably on the climate, having encountered but little sickness, and, providentially, not lost a single life. . . . Inability to cut fuel was the principal cause of our final stop;—the Kroobos, also, were nearly exhausted by the immense labour consequent on the employment of miserably insufficient tools. Scurvy, likewise, made its appearance among the crew, apparently from an improper amount of nourishment. The actual turning back of the vessel took place while Mr. May and I were absent in the gig, endeavouring to make a higher ascent. The furthest point eastward reached by the party was about latitude 9° 30' north, and in longitude 11° 30' east. They believed, from information received, that they were at that place not more than fifty miles from the Faro. The different native tribes, for the most part, gave them the most friendly reception. Dr. Baikie and his party reached the mouth of the river, on their return, on the 4th of November, 1854. During the voyage the amount of sickness was very little, and every case of fever yielded to the careful, but free, administration of quinine, which was also employed largely as a prophylactic, and, as it seemed, with great benefit. The trading part of the voyage was a great failure." In conclusion, Dr. Baikie remarks that, "from all appearances, there is less war and turmoil, and a greater feeling of security, along the river than formerly; as detached huts and patches of cultivated ground are now to be seen along the banks, none of which, I am assured by Mr. Crowther, existed during his visit in 1841."

Capt. ALLEN corroborated, from his own knowledge, the fact, which might be inferred from Dr. Baikie's report, viz., that the tribes inhabiting along the banks of these two rivers were generally well disposed to white men; and that, if commercial relations were established with them, there would not only be mutual pecuniary advantage, but a direct blow would be given to the slave trade.

'On some Water-colour Portraits of Natives of Van Diemen's Land,' by Mr. RICHARD CULL.—Mr. Cull exhibited a number of beautifully executed authentic portraits of natives of Van Diemen's Land, and remarked that the value of these portraits was enhanced by the circumstance that they could not be replaced, for not one of the aborigines was now alive, or, at any rate, not more than one. The chief object of the paper was to show that the aborigines of Van Diemen's Land were not black, as was popularly supposed, but of a brown complexion.

'Description of Timbuctoo, its Population and Commerce,' by Dr. BARTH, communicated through the Foreign Office.—Before reading the paper, Dr. Shaw informed the meeting that Dr. Barth had just arrived in London in safety. Dr. Barth, dating from Timbuctoo, on the 2nd of October, 1853, acquainted the Earl of Clarendon, the Foreign Minister, that on the 7th of the month previous he had reached Timbuctoo, and had met with a very satisfactory reception. He entered from the south side, having navigated a considerable channel of the river. He was escorted to the town from Kabara by Sidi Alawad, the brother of the absent Sheikh of Bakay, and welcomed by great part of the wealthier Arabs inhabiting the place; but was obliged to support before the people the character of a messenger of the Sultan of Stamboul, his real character not being known but to his protector himself. When the Sheikh of Bakay himself arrived, he gave Dr. Barth the fullest assurance of his safety in the town, and his safe return home by way of Borno; he had done so before, and as far as his influence extended, had given "full security to any Englishman visiting this place." Dr. Barth then gives a brief description of the town:—"Timbuctoo is situated, according to an accurate computation of my route, 18° 3' 30" till 18° 4' 5" north latitude, and 1° 45' west longitude, Greenwich; and is distant from the river itself further than has been supposed.—Kabara, its so-called port, being situated on a very small ditch, which, being inundated by the river, is made navigable for four, or, when the rains have been most plentiful, for five months of the year, whereas, during the eight remaining months, all the merchandise has to be

transported on the backs of asses to a much greater distance than Kabara. . . . As for the town itself, it is not now environed by a wall, the former one having long ago fallen into decay; but like the small towns of the Tonray in general, its mud houses form a tolerably entire enclosure, pierced only by narrow entrances. Having been at least twice as large during the period when the Tonray empire was in its prime and glory, its circumference at present does not exceed two and a half miles. The whole town consists of houses built of mud, for the greater part only one story high, while the wealthier people have all their houses raised to two stories. There are at present only three mosques in the town. The market is well supplied with rich merchandise, much better than the market of Kano. But there is a great defect in the scarcity of current coin,—salt, a rather heavy, unmanageable sort of money, being the standard for all larger things much more than gold, while cowries are extremely scarce, and dollars are scarcely accepted in payment by anybody. The population of Timbuctoo, as well as its government, are considerably mixed. The original, and by far the most numerous part of the inhabitants are the Tonray, who, after the supremacy of Morocco had ceased, regained once more the government of their town, and were not disturbed by the Bambara, who did not obtain possession of Timbuctoo, though on the south side of the river; their empire extended as far as Hombori. Besides the Tonray there are the Arabs, partly settled, and partly belonging to different tribes of the desert, and remaining only for several months or years. Certainly, the mixed population of this place for itself is not able to repulse any serious attack, as it was taken twenty-eight years ago (one year before the unfortunate attempt of Major Laing) by the Fullan of Mohammed Lebbo, almost without a struggle." Referring to the Fullan of Hand Allahi, whom he was desirous of visiting, Dr. Barth says—"Their fanaticism would, if not endanger greatly my situation when among them, at least make it all but intolerable. For these Fullan, who call their brethren of Tokoto 'infidels,' and have threatened them with teaching them Islamism, think themselves the only true Moslems. Amongst other things, they have made smoking a capital crime, so that even in Timbuctoo, except near the house of El Bakay, a man smoking is in greater danger than in the streets of Berlin."

Despatch to the Earl of Clarendon relating to Mr. C. J. ANDERSON'S Journey to Lake N'gami, communicated by Mr. FRERE; and a paper 'On late Explorations in Africa,' by Mr. C. J. ANDERSON, were read by Dr. BLACKIE.—The following summary of the results of Mr. Anderson's explorations, is from the despatch:—"The country in the immediate neighbourhood of Lake N'gami is inhabited by tribes under the authority of the chief Letiholetete, who, I regret to learn from Mr. Anderson, has permitted the sale of slaves to the Boers. Mr. Anderson attempted to proceed from the lake up the Trionghe river to visit Liberbe, the capital town of the Bavicko country, said to be about nineteen days' journey by land from the Lake; but his proposal met with so little encouragement from Letiholetete, that, after ascending the river for several days, he was obliged to return. He, however, learns that it was the centre of a great inland trading place, visited by the Mambari, who purchase slaves, ivory, &c. for the Portuguese residents at the settlements on the west coast, and also by the Ovapangari and Ovapan-gama, from the country north of the Ovambo, between the 17th and 18th degrees of south latitude, as well as having intercourse with the tribes under Sebotoane, Letiholetete, and others to the eastward. But perhaps Mr. Anderson's success may be considered of peculiar interest and importance as showing that this well watered country,—the inhabitants of which have proved themselves so friendly and well-disposed towards English travellers—or as Messrs. Oswell and Livingstone describe it, "the great highway into a large section of the continent of Africa,"—may now be reached in from forty to sixty days, from Walwich Bay, with which communication by sea from Cape Town is easy, and that the traveller can reach this

starting-point unmolested by the interference of the emigrant Boers, or by attacks by the plundering Griquas, and without encountering the perils of Kalahari Desert.

'Journey across the Rivers of British Kaffraria, by the Rev. F. FLEMING.—This paper described a journey from the Great Kei to the Q'Nabaga rivers, including a description of some fossil remains which Mr. Fleming discovered near Q'Nabaga.

'On the Skulls of the Ancient Romans,' by Mr. J. B. DAVIS.—Three skulls were exhibited to show the high cerebral development. One of these skulls was found in a sarcophagus at York, and another under the Via Appia. The teeth of two of them were stained with verdigris from contact with the copper coin placed in the mouth to pay Charon, the ferryman to Hades. In one case, the face, an obolus, was found beside the skeleton.

Mr. CULL added several interesting observations on the types of Anglo-Saxon and Celtic skulls, remarking that the round head which characterized the modern Irish was not the type of the ancient Celtic skull.

FRIDAY.

'On the Deciphering of Inscriptions on two Seals, found by Mr. Layard at Koyunjik,' by the Rev. J. GEMMEL.

'The Geographical and Historical Results of the French Scientific Expedition to Babylon,' by Dr. JULIUS OPPERT.—Dr. Oppert stated that he had spent two years on the site of Babylon, examining the cuneiform inscriptions on the bricks and stone slabs. Babylon covered rather more than an area of 200 square miles, being about two and a half more than the site of London. But all this space was not inhabited, there being immense fields to supply the city with corn and pasture in case of siege. Dr. Oppert gave a brief description of the cuneiform inscriptions, and the principle on which particular characters were chosen to represent particular objects and ideas.

'On Celtic, Slavonic, and Aztec Crania,' by Prof. RETZIUS, of Stockholm.—He combated the phrenological view that high skulls betokened high intellect. He had gone into schools in this country, and uniformly observed, on looking around, that not more than one in a hundred could be found without the elongated skull and prominent occiput. The same thing was to be said of his native country, Sweden. There were some among the Swedes who had the short, high head, but it was always found that these persons did not resemble the native population, but had black hair, and were allied to the Finlanders or Laplanders. Phrenologists placed the Slavonian in the Caucasian race; but if this were correct, anatomy was certainly of no use to ethnologists, for it completely contradicted that view. Prof. Retzius then exhibited and described an Aztec skull, which he said was supposed to belong to the ancient Mexicans, and to be, at any rate, older than the Spanish conquest. These skulls had much the same character as those of the ancient Peruvians, and came under the Mongolian type. These skulls were always small, but the chiefs, who may be regarded as the nobility, had elongated heads. The whole American people belonged either to the short-headed or the long-headed class, the former being found on the west side, and the latter on the east side of the continent.—In answer to a question from a member of the Association, Prof. Retzius stated that the Aztec, or ancient Mexican skull, was supposed to belong to the race which had left the gigantic remains of civilization which had been found in that country. In reply to another question, the learned Professor excused himself from pronouncing positively whether the long-headed or round-headed skull represented the highest intellect. There had been many eminent men among the Poles and Bohemians who belonged to the round-headed class; but it might be admitted, on the whole, that the larger proportion of great men had the elongated skull.

'On the Survey of the Himalaya Mountains by Messrs. Schlagintweit,' by Col. SYKES.

'On Hartlepool Pier and Port as a Harbour of Refuge,' by Sir B. F. OUTRAM.

'An Account of a Visit to Medina from Suez, by way of Jumbo,' by Lieut.-Col. BURTON. This

paper appeared to be an abstract from part of Lieut.-Col. Burton's book recently published.

'On the Importance of Periodical Engineering Surveys of Tidal Harbours, illustrated by a comparison of the Surveys of the River Mersey,' by the late F. GILES, C.E., and 'The Marine Surveys of the Port,' by Mr. O. J. BOULT.—Mr. BOULT pointed out the extent to which the sea had encroached upon the land at the mouth of the Mersey, the average yearly encroachment being about six yards, and showed the consequent necessity of repeated and minute surveys, for the purpose of discovering where the sea encroached, and where deposits were laid down, with the view of preserving the harbours undeteriorated.

'Report of the Mersey Inquiry Committee,' by the EARL OF HARROWBY.

After a protracted conversation on this subject, it was agreed to re-appoint the Mersey Inquiry Committee, with the addition of Sir Philip Egerton, and to recommend the Association's Committee of Recommendations to make a grant of 100*l.* towards the expenses of the Committee.

THURSDAY.

SECTION F.—STATISTICS.

President—R. MONCKTON MILNES.

Vice-Presidents—THE LORD PROVOST OF GLASGOW, COL. SYKES, Sir A. ALISON, Prof. A. BUCHANAN, J. MACGREGOR, J. HEYWOOD, W. TITE.
Secretaries—W. NEWMARCH, E. CHERRISH, J. A. CAMPBELL, Prof. HUMEY WALSH.

Committee—E. Ashworth, C. Baird, E. Barrington, Dr. Camps, I. T. Danson, Earl of Eglinton, Earl of Elgin, Count Frolsch, A. Gurney, Earl of Harrowby, A. Hastie, J. Locke, Alderman Scid, Prof. Ramsay, T. W. Rathbone, W. Spens, Sir M. E. Stewart, W. Stirling, J. Strachan.

'On the Condition of the Labouring Population of Jamaica, as connected with the Present State of Landed Property in that Island,' by Prof. H. WALSH.—He commenced by comparing Jamaica to Ireland; both had encumbered estates, absentee proprietors, and an indolent labouring population. The cause of distress in Jamaica was not that wages were high, or that there was any want of natural productions; but the fact was, that the properties were encumbered, and there were legal defects in the way of their changing hands. There was another cause of distress in the fact that, when estates were thus encumbered, they were not properly cultivated. Mr. Carlyle was in error in saying that high wages caused distress; the fact was, that the labourers were not only ill paid in point of money, but their wages would be seen to be not only small, but, further, diminished by the price of the necessities of life, which were taxed to pay for the importation of negroes and coolies to reduce wages still lower. It was to be regretted that Mr. Carlyle had not inquired into details, and confined himself to the calm eloquence of facts. The imperfect machinery of the Court of Chancery, and the extravagant expenses attending the transfer of estates, had a powerful influence in causing the distress complained of. Large estates, as a general rule, could no longer find purchasers; parties on the spot had not the means, and European capitalists did not like to place themselves in the category of bankrupt planters. The title given by the Court was doubtful. The want of purchasers led to the estates being placed in the hands of Chancery receivers. These causes prevented the prosperity of agriculture in Jamaica; the lands needed to be transferred, but the legal difficulties and expenses could not allow of it. The remedy was the abolition of the excessive fees, the granting of Parliamentary titles, and the establishment of an Encumbered Estates Jurisdiction, such as had worked so well elsewhere.

'On the Emigration of the last Ten Years from the United Kingdom, and from France and Germany,' by Mr. W. NEWMARCH.—Five hundred thousand persons had emigrated annually during the last five years from Europe to America, of which 300,000 went from England, and 200,000 from central Europe. The population of Great Britain had increased 300,000 during this period; so that the entire increase of our population from natural causes had emigrated. This could not go on without materially interfering with the population and position of this country, although Dr. Farr thought it could do so. There was a Board of Emigration in France somewhat similar

to ours, and a decree of the Emperor made regulations corresponding to our Passenger Act. The French emigrants came chiefly from the Rhine districts. Our emigration was chiefly—60 or 70 per cent.—from Ireland. It was nearly self-supporting. It had raised the rate of wages greatly in Ireland. The re-action of this emigration was most beneficial; not only had the surplus population been removed, but a stream of money was flowing back in the shape of remittances. The emigration into the United States in 1854 was 460,000, of whom one-half came from Great Britain and the other half from central Europe. France has been but little affected by this vast emigration. In ten years (1844 to 1854) the emigration to the United States had been 34 millions; and the population of that country had increased 37 per cent., which was three times the rate at which our population increased. He then referred to the great prosperity of our North American colonies, and the rapid rate at which they had progressed during the past ten years. In that period they had undergone changes, and assumed a position fraught with importance to this country. He next alluded to our Australian dependencies. The colony of New South Wales remitted 1,600,000*l.* to this country in 1853, to promote emigration thither; and the other colonies had also remitted large sums for the same purpose.

Mr. HEYWOOD said the emigration from Germany was greatly stimulated by the fact of the cruel and oppressive regulations which were enforced there in religious matters, so that people were glad to get away, that they might be enabled to worship God after their own fashion. People would hardly believe the statements which had been made, on good authority, as to the manner in which people not belonging to religions recognized by the State were persecuted in Mecklenburg-Schwerin and other parts of Germany.

A long discussion ensued on the subject of the present decline in the emigration from Ireland.

Mr. SIMMONDS attributed the check partly to the anti-Irish operation of the Know-nothing party in America. He did not think that this emigration would be permanently checked; but if this anti-Irish feeling continued, the stream of emigration would be directed towards Canada and other British Colonies. This was already beginning; but there was a prejudice amongst the Irish against British Colonies. He noticed also the immense emigration from China, although the Chinese were disliked and ill treated both in California and in Australia.

Mr. NEWMARCH stated that the emigration of this country employed a fleet of 1,000 ships, with a tonnage of 800,000. These vessels sought return cargoes, often at Calcutta, which had a good effect on the commerce of this country. They were the finest and largest vessels we had.

'On the Physiological Law of Mortality, and on certain deviations from it, observed about the commencement of Adult Life,' by Prof. BUCHANAN.

—The mortality was greatest in the first year by 40 per cent. The security of human life is greatest at thirteen—that is 5 in 1,000 die. In the first month of life 96 in 1,000 die. In the first week of life the mortality is 240 per cent.—that is, if that rate of mortality was to continue, the whole would die in five months. The mortality does not increase in a regular ratio, but it is from interfering causes. The mortality was very great at twenty-four, much greater than it was for some years after. M. Quetelet admits this, and sets the subsequent mortality at twenty-nine, and attributes this to the persons who are most violent at that age. The cause of increased mortality about twenty-three is probably the anxieties, fatigues, and dangers attending the entrance into life and the obtaining of a livelihood; and the mortality amongst this class is far greater than amongst those who were provided for by their friends, or have succeeded in making provision for themselves. The security of life amongst the labouring classes of provident habits, judging from the results by investigations in connexion with friendly societies, is shown to be greater than among the higher classes, who are comparatively destitute. In the life of clerks the minimum mortality was at 16,

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and the maximum at 23. This is curious, and is not easily accounted for. The mortality decreases till 35, and then goes up in the regular way. In the life of plumbers the maximum mortality is at the early age of 18; there is a declension, and then another maximum at 38; and the proportion then goes on regularly according to the ordinary law. The bakers' maximum is at 18; the mortality declines till 22. Female workers have an early maximum of mortality; at 10 it goes down till the age of 24; the maximum is at 28. In the cases of country labourers it was found that the advantages of open air and exercise were more than an equivalent for the advantages possessed by the wealthy for preserving health. In the medical profession the maximum is about 24, when young men are overcome by the excessive labours undertaken to gain a position in life; the mortality becomes very much less as they become older and attain a comfortable position in life.

'On the Progress, Extent and Value of the Coal and Iron Trades in the West of Scotland,' by Dr. J. STRANG.

'On the Localities of Crime in Suffolk,' by Mr. J. GLYDE, jun.—Mr. Glyde's paper showed that in Suffolk the greatest amount of crime is committed in the villages, not in the large towns.

FRIDAY.

'On Juvenile Delinquency, its Causes and Cure,' by the Rev. A. K. McCULLUM.—The paper consisted of an explanation of the mode of cure adopted in the Glasgow Reformatory.

'On Measures relating to the adoption of the Foundry and Agricultural System for the Reformation of Criminal and Destitute Children,' by Mr. J. McCLELLAND.

'Remarks on two Lectures delivered at Oxford in Trinity Term, by the Professor of Political Economy, on the subject of a recent paper by Mr. Newmarch, "On the Loans raised by Mr. Pitt from 1793-1801,"' by Mr. NEWMARCH.

'On the Price of Silver of late years affording no correct Measure of the general Value of Gold,' by Prof. H. WALSH.

'On our National Strength, tested by the Numbers, the Ages, and the Industrial Qualifications of the People,' by Mr. J. YEATS.—To maintain our position we shall have to put forth all the national strength. It lies chiefly in the numbers, in the youthfulness, and the industrial qualities of the people. The population of Great Britain in 1651 was computed to be 3,378,000. In 1751, 7,392,000 = 1,014,000 increase in a century. In 1851, 21,185,000 = 13,793,000 increase in a century. The striking disparity in the ratio of increase for the two centuries is accounted for by discoveries in the art of medicine, by a more general and more practical recognition than had previously existed of the laws on which the well-being of mankind depends. Between 1801 and 1851, the population of Great Britain increased 93.5 per cent.; that of Ireland, however, only 36 per cent. The increase in the United Kingdom has been 3 per cent. only, making it less than that of some of the old states of Europe. In England and Wales there are said to be 55,110 square yards to each house, and 10,077 square yards to each individual. In Scotland 262,024 square yards to each house, and 33,589 square yards to each individual. The absolute density varies very considerably in different localities, from 18 to the square mile in the district of Bellingham, Northumberland, to 185,751 in the district of East London. From the map of Scotland we see how thickly the hives of industry are clustered around the firths of the Clyde and the Forth, and the plains and coal-fields between the Cheviot Hills and the Grampians. In England, the banks of the Mersey, the Severn, the Thames, the Humber, the Tyne are thronged, and along the centre of the country, population passes like a tide. The tendency of people to increase in towns, and to remain stationary in point of numbers in the rural districts, is very remarkable, and deserving of especial attention. In the towns, taking them as a whole, there are 5.2 persons to an acre; in the country, 5.3 acres to a person. In the former there are 3,337 persons to a square mile; in the latter, 120 only. The growth of the population throughout the United Kingdom is principally in

the manufacturing and the maritime, not in the agricultural districts. There is a close but not inseparable connexion between numbers and strength. The people of Great Britain are neither infirm nor impoverished, yet the effective portion of the population seems at first sight very small. Of 21,185,000, the males, at the soldier's age, in 1851, amounted to 3,193,496. Infancy and age, with all the ills that flesh is heir to, affect the national strength. Great Britain contained, in 1851, under 1 year of age, 578,543; under 15, 7,458,080; under 20, 9,553,114; between 20 and 40, 6,555,954; 40 and 60, 3,526,342; 60 and 80, 1,414,798; 80 and 100, 129,483; above 100, 319. The Commissioners state in their report that there can be now no doubt that some of the 21,000,000 of people in Great Britain have lived a century, "which may therefore be considered the circuit of time in which human life goes through all the phases of its evolutions." The probable lifetime of a male at birth is nearly 45 years. The mean lifetime, or the average number of years that males live after birth in England is rather more than 40 years (40.36 years), so that the majority of us live only about two-fifths of the years others attain to; or, may we not rightly say, two-fifths of our appointed time? Could the full period of existence be survived by all, that prolongation would be tantamount to more than doubling the present population. But while the average duration of life is 45 years in Surrey, it is only 25 in Manchester and Liverpool. It appears, too, that the population is now younger than it would be by the natural standard, younger probably in England and Scotland than in any country in Europe. A larger proportion of the helpless may thus be thrown upon those who are in the prime of life; but the tendency of such a state of things is to give a preponderance ultimately to the youthful element in society, and consequently scope for the development of greater energy and enterprise. In this there is hope for progress. From the returns of the Census of 1841 for the United States, we find a predominance of the youthful element there, and to it some have ascribed the recklessness of the American people, others their rapid progress. In our country, of 4,694,583 children of the ages of 5-15, only 2,405,442, or little more than half the number, are returned by the parents and heads of families as scholars at home or at schools. The industrial qualifications of the people may be estimated from the list of occupations, and the number of persons severally engaged in them. Capitalists and the administrators of capital expect a fair return for their investments; they keep no superfluous hands, and cannot afford to encourage incompetency; yet they compete one with another for the possession of the most productive labourers. 'On a Mechanical Method whereby a Life Table commencing at Birth may be converted into a Table exactly similar, commencing at any other Period of Life,' by Prof. BUCHANAN.

THURSDAY.

SECTION G.—MECHANICAL SCIENCE.

President—J. MACGOWEN-KENNEL.
Vice-Presidents—R. NAPIER, J. WHITWORTH, Dr. NEIL ARMOTT.
W. FAIRBAIRN, G. RENNIE.
Secretaries—J. THOMSON, L. HILL, Jun., W. RAMSEY.
Committee—J. ALKIN, Dr. N. ARMOTT, J. P. BATHURST, J. BOULT, J. BUCHANAN, T. DOBSON, J. HAWKSHAW, A. HENDERSON, J. R. NAPIER, Lieut.-Gen. Sir C. W. PASLEY, G. RENNIE, Rev. T. R. ROBINSON, J. SCOTT, C. F. SMYTH, Rev. R. STIRLING, W. TILLY, J. P. URE, W. SYKES, Ward, T. WEBSTER, H. P. WILSON, Sir D. BREWSTER, Neil ROBINSON, Rev. Dr. SCORSEBY, C. B. ROBINSON, J. FENNANT, J. G. APPOLD, A. KING, J. P. NICHOL, Rev. Dr. WHEWELL, B. HART, Dr. TAYLOR, Earl of HARROWBY, Lord WROTTESLEY, J. GRANTHAM, W. W. RUNDALL, Col. JAMES, J. HOULDSWORTH, H. HOULDSWORTH, Capt. Sir E. BELCHER, Capt. MacLagan, J. B. NEILSON.

'Opening Remarks on the Objects of the Section,' by the CHAIRMAN.—It was intended to combine the theoretical and practical parts of the science of mechanics for popular use. It had long been a general prejudice that these two departments were inconsistent with each other, because few persons combined the two. A chair had been established in Glasgow fifteen years ago by the Crown, for teaching the theoretic and practical mechanics combined; but even under the professorship of Mr. Lewis Gordon, the attendance was so small that the chair was discontinued. The prejudice had now to a great extent disappeared. Last session the chair was resumed, and secured a large attend-

ance, who all showed great anxiety to profit by the lectures. A more suitable place could not be found for the discussion of these subjects than within the walls of a university so closely associated with the name of Watt. Another object of the Section was to take into consideration the laws affecting inventions, and for urging them on the attention of Government, in which it had already been very successful.

'Provisional Report on the Strength of Iron Plates,' by Mr. FAIRBAIRN.—Mr. Fairbairn stated that he had been unable to complete the experiments under different temperatures, but so far as they had gone they were very satisfactory. Mr. Hopkins had gone far to discover whether it was liquid or solid at the centre of the earth. They had gone so far as a pressure of 104,000 lb. on the square inch. He hoped to be able to finish the experiments by the next meeting of the Association.

'Provisional Report on Boiler Explosions,' by Mr. FAIRBAIRN, who said he had not been able as yet to make many experiments, but had a boiler made so as to determine not only the proportionate strength of boilers, but also to offer suggestions for their management. Their boiler was 17 feet in diameter, with two internal tubes, 3 feet in diameter. It had stood a pressure of 80 lb. on the square inch, but at 100 one of the tubes collapsed. Their object was to discover a means of proportioning the strength of all the parts. It was also desirable to discover something as to the elastic force of steam, and its properties.—In reply to a question, Mr. Fairbairn said he had investigated no less than a dozen explosions, and there was in the press a series of papers, stating, so far as he knew, the causes. Sometimes they arose from gross negligence, but he believed the majority arose from excess of steam; and it was desirable to be able to proportion the strength of all the parts.

Mr. RENNIE having taken the chair,—

'On Practical Tables of the Pressure and Latent Heat of Vapours,' by the PRESIDENT:—a paper illustrating a new method of drawing up tables for calculating the amount of heat required to expand steam and other vapours so as to fill a given space. The paper was of too technical a character to be given here, but the fundamental formula is, "The latent heat of evaporation of one cubic foot of a given fluid, at a given temperature, is the product of the absolute temperature by the rate of variation of the pressure with the temperature."

'On the Transmission of Time Signals,' by Mr. C. P. SMYTH.—Mr. Smyth gave a minute description of the manner in which the time-ball on Nelson's Monument in Edinburgh, and the machinery connected with it, are constructed and managed. He directed attention to a model, which was connected with the wires of the electric telegraph by a wire from the Royal Exchange, erected at the expense of Sir Thomas M'Dougall Brisbane. At five minutes to one, two minutes to one, and at one o'clock, the time was communicated from the Royal Observatory in Edinburgh, and indicated by the model. He said Sir Thomas Brisbane was one of the most earnest promoters of the erection of time-balls at the harbours of Glasgow and Greenock, having on his many voyages been convinced of the imminent peril and numerous shipwrecks which arose from the want of correct chronometers for ascertaining the longitude. It was shown by the Greenwich experiments that there was no inaccuracy to be apprehended on so short a distance as between Edinburgh and Glasgow.

'On Practical Details of the Measurement of Running Water by Weir Boards,' by Mr. JAMES THOMSON,—which would require diagrams to render the explanations intelligible. The principal point made out by Mr. Thomson was the value of a certain form of weir board, and he demonstrated that the edge should be reduced to the thinnest possible degree.

A conversation took place, in which Dr. ROBINSON, of Armagh, Mr. RENNIE, and other gentlemen joined.—At the conclusion, Mr. James Thomson was required to draw out his paper in full, that the facts he had elicited might be available for reference to engineers.

Prof. THOMSON explained the construction of an improved air-pump, the invention of a working man, Mr. James Laing. The principal peculiarity was, dispensing with the valve, two pistons being placed in one cylinder, so as to act as valves to each other.

FRIDAY.

'Report of the Inventors' Fund and Patent Laws Committee,' by the EARL OF HARROWBY.

'On the Operation of the Patent Laws,' by Mr. J. MACQUORN-RANKINE.—He said the new patent laws have produced some benefits, as simplifying the means of procuring patents, the division of payments, and the speedy publication of new patents, &c. But he thought the facility with which patents are granted is an objection, as furnishing a means for foolish inventors to take patents under the new law; as also the fact, that as patents are provisionally registered for three months, the public cannot know what the character of a new invention is, and therefore more than one or two persons may take a patent for the same invention. Mr. Rankine pointed out several defects in the law of patents. The scope of the paper was to induce the Section to move for a reform in these laws.

'On Artillery and Projectiles,' by Mr. W. B. ADAMS.—Mr. WARD read this paper, which gave a description of various kinds of projectiles, and the philosophical reasons why gun-cotton is better for blasting rocks than for gunnery. The first guns in use in all countries were long; but the inconvenience of very long guns was the cause why the length was curtailed, and why also caronades and mortars were invented. The paper then went on to describe the material of which artillery should be made, and the proper mode of manufacture, and an improved trunnion, with some original suggestions regarding the form of wadding and shot best suited to give sure aim and increased velocity and penetration. In giving his idea of the best form of a ball, Mr. Adams thought that the conical form, with feathers, was the best, which is exactly that which Mr. Kennedy, of Kilmarnock, has lately patented, and which has been experimented upon lately at Ardrossan and Troon. The idea of an elongated ball, which should also be charged like a bomb, has also been anticipated by Mr. Kennedy. Welded guns, united by hydrostatic pressure,—the coating inside with another metal to prevent abrasion,—and several other improvements, which have in part been adopted by inventors, were also recommended.

Dr. ROBINSON was of opinion that feathers upon a ball was a mistaken idea, because the ball carries with it a portion of air, and that rotation could not be secured to the ball by feathers, alone, as they could not act but on the body of air which they carried with them. Rifled guns are more liable to burst, because the force necessary to explode a ball from such a piece of ordnance is much greater than that required for a plain bored gun; and also that a rifled gun is much more liable to burst or be rendered useless from frequent discharges, because of the force necessary to cause rotation having to be added to that which causes projection. Dr. Robinson alluded to the bronze guns of the Dardanelles, which are of three-feet bore, used against our fleets not many years since, and which were made by Mohammed II., and asked whether bronze might not now be used instead of cast-iron. He suggested the probability that on experiment railway-iron might be found better than cast-iron for ordnance.

—Mr. FAIRBAIRN said the material of which guns were made was not so good as it was fifty years ago. He was present at Woolwich this week, and saw the practice of the guns there. One of them seemed properly moulded in every part; but it was found that the welding in one part was not sound, and the gas getting into the fracture operated just like a wedge, and split it as if it had been made of paper. Another was formed of steel bars, with a breech of cast-iron attached to it. The breech was entirely blown off the gun, and the bars torn asunder. It appeared to him absolutely necessary to have such a material as would not only resist the severe impulse which the discharge of the shot caused, but be perfectly solid in the mass. If they were made of parts, such as the staves of a cask, these opened, and the result was the fracture of the

gun. The Stirling gun was a mixture of wrought-iron with cast-iron, and it certainly carried one-fourth or one-fifth more of common pressure, but when applied to artillery under Colonel Dundas, after a few rounds the pieces were burst. The mode of casting these large guns is also defective. They were generally cast solid, and in the cooling the metal was left exceedingly porous in the centre, and when one began to bore out the gun, one found it was not of so close a texture inside as out. Now they took the precaution of having cores in the middle, through which they sent a current of cold water to cool the inside simultaneously.—Dr. ROBINSON: About a century ago they cast them hollow, and it was thought a great improvement to cast them solid.—Mr. FAIRBAIRN believed if they went about the work more carefully, they would arrive at a safer and better mode of casting than at present. If the mortars were made a foot longer, he believed, instead of sixty pounds, fifty pounds of powder would carry a shell of the same weight, and to a greater distance, and with greater accuracy. He thought, in the mortars, a great quantity of the metal was in the wrong place in a great many cases. They had the same thickness of metal at the mouth as at the breech, whereas it might taper without any danger, the pressure being less at the mouth. He explained an ingenious ball, in which there was a spiral tube, so that the ball with an ordinary gun suited all the purposes of a rifle; but he did not know whether the experiment was successful or not. Till lately guns of the ordinary calibre would stand 600 or 700 rounds before they were injured, but they always gave way at the vent. But they got into a plan of putting a tube into the vent, which made them stand 600 or 700 rounds more. Now-a-days the same guns would not stand 100 rounds; perhaps the reason was that the metal was not properly selected. He believed the subject was now before the authorities at Woolwich of what caused the explosion at Sweaborg, and he hoped it would lead to better material, or a better selection. The iron procured by hot blast is excellent for machinery purposes; but he did not think it the best for artillery. With regard to the Turkish artillery, he was at Constantinople some years ago, and they are almost all made of a mixture of brass and tin. Mr. Mare, at Blackwall, is now constructing a gun three feet in diameter—the breech of cast-iron and the tube of direction of wrought-iron. Whether it would answer or not he did not know.—Dr. ROBINSON: The bronze guns failed in a very remarkable manner. The ball rises on firing, is deflected on the gun, and if the gun is long it is again deflected, and deep holes are made in the barrel owing to the softness of the metal. Could not a thin lining of steel or wrought-iron be inserted into the tube?—Mr. FAIRBAIRN thought it was very difficult to form any gun that differed in its parts. He would prefer to have a gun perfectly solid—of steel, if they pleased; for he had seen excellent specimens of steel manufactures from Prussia in the Great Exhibition, and well calculated for making field artillery. The artillery of the present time was much larger than it was in former times, and allowance must be made for that. The Government was endeavouring at present to get charcoal-iron from Nova Scotia, and there were large supplies of wood and iron in the Bay of Fundy.—Mr. LAWRIE proposed to have no vent at all, but to fire in the manner in which rocks are blasted, by means of galvanism. This would prevent wearing at the vent. He hoped artillery would be brought to perfection, for as weapons had improved war had decreased in brutality; and he hoped there would be a good stand-up fight for it, in order that they might have a lasting peace.—A Member stated that some hydrostatic presses had been made of cast-iron with a case of wrought-iron, at Mr. Downie's works here, and had stood an immense pressure, but they had not as yet tried it on guns.—Mr. FAIRBAIRN asked if the gun made at Mr. Downie's had been cast in such a way as to cause an amalgamation of the cast and wrought-iron? If that were the case, he had no doubt it would secure great strength. He had a doubt, however, that there was a difference of ductility which would cause separation. It had occurred to him that they might be cast under ex-

treme hydrostatic pressure. They had cast them at Woolwich with 19 feet of iron on the gun, but he did not as yet know the result.—Mr. SYKES WARD thought a gun could not explode so readily if the powder did not impinge directly on the ball.

MISCELLANEA

New Mode of Transplanting Trees.—Mr. Barrow's machine resembles the common tumbrels for the conveyance of large pieces of timber, with the exception that the load is carried in a perpendicular position, and, while in motion, oscillates in the same manner as the suspended candlesticks in the cabin of a ship, instead of hanging horizontally between the wheels. Four wheels of large diameter support an oblong stage formed of beams of timber strongly knitted together. Two sets of these beams run lengthwise, parallel with each other, there being an interval of about two feet six inches in width between each set. These are firmly bound together at each extremity, by another system of beams resting on the axletree of each pair of wheels, so that an opening of a rectangular parallelogram shape is formed in the centre of the stage. When it is proposed to remove a tree, this framework is wheeled up to it, and the transverse bars in front having been temporarily detached, the trunk of the tree is placed within the parallelogram. A square trench—or rather, four trenches of equal length, and at right angles to each other—are then dug, beyond the limit of the roots, and of a depth corresponding to their width. When this is accomplished, the tree is by degrees undermined, and strong planks of deal are, during the progress of that operation, driven from trench to trench, underneath the mass of clay which they enclose. The heads of these planks have chains attached to them, and these again are connected with powerful jacks—screws acting on the same principle of combination as the common patent corkscrew—placed on the stage of the framework, and by the agency of these the whole mass is raised above the level of the earth's surface, when the void occasioned by its removal is filled up, and a way made firm for the passage of the hinder wheels across the chasm. A team of horses is next yoked to the machine, and these transport the tree to the site prepared for its reception, into which it is slowly lowered, and thus the operation is completed.

Relics of Literature.—In your article on "Autography" mention is made, in conjunction with the works of I. D'Israeli, of an essay 'Relics of Literature,' by Mr. Stephen Collet on the same subject. Stephen Collet, M.A., was one of the numerous *noms de plume* of the late Thomas Byerley—the Reuben Percy of anecdotal fame—who was, until his death in 1826, editor of the *Star*, *Evening Newspaper*, the *Literary Chronicle*, and the *Mirror*. Should these remarks come under the notice of the British Museum authorities, they may, perhaps, be induced to correct their catalogue accordingly.

Yours, &c.

G. H. B.

Paris, Sept.

Scottish Song.—"In Lady Nairn's song of 'Gude night, and joy be wi' ye a'!' quoted in the *Athenæum* of the 8th inst. [p. 1026], there must certainly be a misprint, whether to be debited to Dr. Rogers or yourself I cannot say. The beginning of the third stanza, as given by you, runs thus:—

My harp, farewell! thy strains are past,
Of gleeful mirth and heartfelt care;
The voice of song must cease at last,
And minstrelsy itself decay.

—Now, as 'care' and 'decay' do not rhyme, I submit that the authoress must have written in the second line—

Of gleeful mirth and heartfelt *ecce*.

"R. E. B. MACLELLAN."

—The mistake, if there be a mistake, is in Dr. Rogers's text—not in our copy of it, as reference to the book will show.

TO CORRESPONDENTS.—C. A. C.—R. E. B. M.—W. S. C.—J. D.—B.—Q. Q.—T. M.—T. C.—B. T.—R. S.—D. J. H.—S.—received.

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